Developing an Integrated Appraisal and Revalidation Process for Sri Lankan Doctors – An Expedited, Low-Cost Process Using a Prototype

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Abstract

Medical revalidation is considered as one of the better ways which can improve quality of health care and improving patient safety and satisfaction. Many developed countries in the world have either implemented or in the process of implementing medical revalidation systems. However, the development of revalidation process is very complicated process and requires lengthy periods and involves huge cost to the health systems. This study looked at a novel way of developing a revalidation process using the concept of prototyping. Prototyping provides low cost and quicker process of developing health system tools to achieve key objectives.

This study has taken pragmatic stance to develop a process that can be implemented in the real world, especially in developing countries with western medical system. The study was conducted to develop medical revalidation process in Sri Lankan health sector as an example.

The study has adopted 3 stage research with the mixed methodological approach. At the first stage, an extensive narrative literature review was conducted, and understanding from the literature review and personal experience of the researcher was used to develop a porotype of revalidation for Sri Lanka. At the second and third stage, the porotype was tested using explorative sequential design consisting of the qualitative stage and quantitative stage sequentially. Focused group discussions and in-depth interviews were conducted among stakeholders.

Cultural Historic Activity Theory (CHAT) is used to discuss the contradiction while framework analysis was used to identify themes and qualitative data analysis. The outcome of the qualitative stage was used to develop a and to modify the prototype. The structured questionnaire was used as the tool for the quantitative stage.

On analysis, it was found that Sri Lankan doctors are ready for revalidation based only on CPD activities with support for the later inclusion of other tools such as appraisal, MSF, and complaints investigation. Revalidation allowance was reported as a way of counteracting resistance and increasing the attractiveness of the revalidation process.

It was recommended to adopt stepped wedge cluster randomised approach to implement the revalidation process as it provides an opportunity for system development. Additionally, it provides a reliable way of assessing the effectiveness of the new program. The research has provided a novel way of developing health system tools especially important for developing countries as it provides low cost quicker approach.

Key Words: Revalidation, Activity Theory, Continuous Professional Development, Sri Lanka, Appraisal, Multi-Source Feedback

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1 Introduction

This study aimed at developing an integrated appraisal and revalidation process for medical doctors in Sri Lanka. It has been undertaken in an institution in Sri Lanka. This thesis proposes a new and quick way of developing comprehensive appraisal process, particularly in the healthcare industry. The methodology can be used to develop other administrative processes in healthcare and other related sectors.

1.1 Medical Regulations

Medical regulation is a complex and varied widely in different countries and even within the same country. The primary intention of medical regulations is as follows,

- safeguarding patient care
- maintaining standard of medical professional
- promotion of public trust.

Regulators around the world are beginning to introduce more robust regulations including continuous evaluation of medical doctors. The changes of regulations were due to changes in the society. Revalidation is a medical regulation operating in the United Kingdom (UK) and has shown promising results in improving patient care. Many medical regulators have either adopted similar process or designed innovative programs for the same process. The development of these processes was time-consuming and expensive. In this study, I am adopting a novel approach to develop a revalidation process suitable for primarily in Sri Lankan context. However, the low-cost and quicker approach will provide a way for many developing countries and thereby add knowledge to the existing databases.

1.2 Definition of Revalidation and Synonyms

Validation is defined in English in diverse ways. Oxford Advanced Learners Dictionary defined it as “the act of stating officially that something is useful and of an acceptable standard”(Oxford University Press, 2017). A more detailed and relevant definition is given in an online dictionary as “to give official sanction, confirmation, or approval to, as elected officials, election procedures, documents, etc.”(Dictionary.com, 2017). Revalidation, thus, refers to conducting validation repeatedly or in subsequent times.

Medical Revalidation is the revalidation process designed for medical professionals. It is defined by the General Medical Council (GMC) in The United Kingdom (UK) as “the process by which all licensed doctors are required to demonstrate on a regular basis that they are up to date and fit to practice in their chosen field and able to provide a satisfactory level of care. It means that holding a licence to practice is becoming an indicator that the doctor continues to meet the professional standards set by the GMC”(General Medical Council, 2015).

Medical Revalidation is considered as a global requirement to ensure patient safety and for maintenance of professional standards. However, the terms and procedure for the revalidation process differ in different parts of the world. In New Zealand, recertification is the term used for the revalidation process. In Australia, both recertification and revalidation are used. In the United States of America (USA) the same process is called “maintenance of licensure” while in Canada the term used is “ensuring competence”. Also, medical relicensing, continuous professional development (CPD), continuous medical education (CME) are closely linked to medical revalidation and appraisal. In this study, the term revalidation is used synonymously with above terms. The objectives of revalidation are discussed below in chapter two.

Medical revalidation is a multifaceted intervention intended to improve patient safety and care, improve the professionalism of doctors and overcome the weakening confidence among people. Many regulators around the world have begun to respond to public calls by adopting a continuous evaluation process. Some of these evaluations have shown positive results and are discussed in the literature review.

A medical appraisal is defined as “the process of facilitated self-review supported by information gathered from the full scope of a doctor’s work” (Critchley *et al.*, 2014).

A good medical appraisal process will help doctors to reflect on

- How individual doctors demonstrate that they meet the values and principles stated in Good Medical Practice guideline
- How to enhance the quality of their medical practice by planning their CPD/CME activities
- Identifying and prioritising their own training and skill development activities
- Suggest ways of improving their own productivity and organisational productivity

The Medical Appraisal process is a specified process and has distinctive characteristics from a traditional appraisal process. However, the traditional appraisal process can be modified to create a more effective medical appraisal process. Different models of medical appraisal systems are discussed in chapter two. A model suitable for each country can be different due to many factors including socio-cultural aspect, health system organisation, medical pluralism, historical contexts and legal background. Doctors, medical officers and medical professionals are used synonymously in the thesis. Therefore, it is worth considering these aspects in the introduction chapter.

1.3 Health systems in the world

People's understanding of health is different from one society to another society even within a single territory, this is mostly cultural. A health system is a collective name given for the collection of methods used to categorise illness, the perception of illnesses, and the prevention and healing of a perceived illness. Identifications of different medical systems can enrich the understanding of the community. Prevalence of more than one medical framework within a single community or country is defined as medical pluralism. Understanding and acknowledging the medical pluralism in a culture is important as it complies with fundamental medical ethics of modern world. The fundamentals of medical ethics are

- Respect for Autonomy – medical doctors have an obligation to respect the patient as an individual who has the right to make decisions based on his/her values.
- Non-maleficence - obligation to identify, minimise or avoid harm to patients
- Beneficence Clinicians - obligation to seek the patient's good.
- Justice Clinicians - fair distribution of services for patient populations(Tilburt and Miller, 2007).

Ethnomedical researchers have identified over 100 different healing systems and sub-systems in the various regions of the world. The healing systems may differ in many ways and these include the perception of the human body in diverse cultures, understanding of etiological factors, classification of illnesses, methods of healing and recognition of healers and much more. Acceptance of different healing systems and treatment modalities also depend, at least to some extent, based on the above perceptions. Researchers had explained how culture can affect selection of medical systems and medical procedures (McCallum, 2005).

Also, it is proved that cultural background influence on health care decisions (Teixeira *et al.*, 2013). Traditionally, the healing systems are divided into two broad groups namely, Western biomedicine (WBM) and complementary and alternative medical (CAM) systems.

Sri Lanka has a pleuritic medical system. However, WBM is dominant medical system in terms of adoption prevalence. Revalidation can have significant change to the way people perceived on the wester medical system. Revalidation can result in significant change of adoption of WBM. Different health systems in the world and in Sri Lanka are discussed in the literature review. Table 1-1 shows some of the common CAM systems prevalent in Sri Lanka and other Asian communities.

Table 1-1: Main Complementary Health Systems Adopted by Sri Lankan communities

	Region	Theory	Healing practices
Ayurveda	Indian subcontinent	Imbalance of elements or humour (*dosas*)	Diet, purification, medicines
Possession Cults	Widespread (Africa, Asia, South America)	Offending spirits or ancestors	Possession by spirit allows propitiation
Traditional Chinese Medicine	East Asia	Imbalance in energy in five phases (air, earth, wind, fire, water)	Herbal and other medicines, diet, acupuncture
Unani medicine	Indian subcontinent; Middle East	Imbalance in humour or life force	Herbal or mineral medicines
Islamic medicine	Widespread	Disturbance of heart as centre of spiritual, emotional and physical experience	Recitation of Quran and Islamic culture

Different medical systems differ significantly from each other as they use a different theoretical base, diagnostic systems and therapeutic practices (Institute of Medicine of the National Academies, 2005).

1.4 History of Sri Lankan Health System

Sri Lanka has been known by various names in the past. However, the official name was changed to Sri Lanka in 1972 with the formation of a new constitution at the same time. The development of medicine has been influenced by both external and internal factors. Before the colonial period began, the intrinsic factors predominate the development of medicine in Sri Lanka. The intrinsic factors included mythical believes, religion and agriculture and other economic activities. This is mainly due to the country being an island nation. From ancient time, even before Mahawansa, there was state support for health care in the country. The famous Indian story “Ramayana” had described the great King Ravana was one of the physicians, and he had his own formulas for the treatment of different illnesses. It further described that how Indians imported some herbal remedies during the great war of Rama-Ravana. The second phase of Sri Lankan healthcare was during the pre-colonial period between 4 BC and 1505AC. Sri Lanka had a well-documented history in Mahawansa. Almost all the kings gave their full support towards the development of medicine. There were many in-patient facilities, especially attached to monasteries in Anuradhapura, Polonnaruwa and Dambadeniya kingdoms. The next era was during colonial ruling by Portuguese, Dutch and English. The Portuguese first arrived in Colombo in 1505. Medicine practised by the Portuguese at the time was not entirely western, as it had an oriental flavour as well. Some of their medicinal knowledge was derived from the Moors of Spain. The Dutch period started with the capture of the maritime provinces by defeating a long drawn out siege of Colombo in 1656. The impact that the Dutch had on the local medicine was only a fraction more than the Portuguese. They built more hospitals than the Portuguese, and that again was for serving their forces, shipping personnel and other Dutch nationals in the country. Hospitals were established in strategic garrison towns, several of which possessed harbours as well. The British captured the Maritime provinces from the Dutch in 1796 and annexed the

Kandyan kingdom in 1815. They ruled the country till 1948 when Sri Lanka achieved independence. The early phase of British medicine belonged to the military who controlled both the military and public health institutions. With the creation of a separate Civil Medical Department in 1858, a new phase was born by which medical facilities were provided to the civilian by a department free of military control. The British were very much concerned about the health of the local population. Several Governors, in their addresses to the Legislative Council, indicated their solicitude for the health of the people (Uragoda, 1987).

1.5 Sri Lankan Western Health System at present

Sri Lanka is a small island located south of India. Sri Lanka has a land area of 65610 km2. It has estimated the population of 20.1 million with a slightly higher female population of 1: 1.065 ratio. The population growth rate is nearly 1.1%. The total population comprises of 33% below 19 years, 59% between 20 -64 years and 8% above 65 years. Sri Lanka is a multicultural, multi-ethnic country. There are three main ethnic groups in the country with a majority of Sinhalese which comprises of 74% of the population while Tamils and Moors comprises 15% and 10% respectively (Department of Census and Statistics, 2015).

Sri Lanka has universal free healthcare provision from public sector institutions for all its citizens. The healthcare is free at the point of delivery. The government expenditure on healthcare was about Rs. 253 billion in years 2012, this was equivalent to Rs. 12,388 per person, or US$97 per capita. This was about 3.4% of Gross Domestic Product. However, according to the estimates, public sector expenditure comprises only 44% of the healthcare costs. 56% of expenditure is from outside sources including personal expenses of patients. The role of insurance schemes and employees' insurance also getting to significant proportions in recent years. The largest part of health care money is spent on curative services and the percentage of expendature this appered to be

increasing over the time. The expenditure on outpatient services are mainly from private sector financing which is about 75% in 2012 (Amarasinghe *et al.*, 2015). The health financing is important here as revalidation process will incur additional cost on the present health system.

The focal point of healthcare in Sri Lanka is the Ministry of Health (MOH). Both private sector and public sector is regulated through this focal point. As health services are decentralised, there are provincial health departments in each of 9 provinces in Sri Lanka. The private sector is regulated through Private Health Regulatory Council (PHRC) in the MOH and provincial branches of PHRC. As the private sector operated on free market concepts, it mainly caters lucrative curative sector. As a results, large private sector organisations are concentrated in the densely populated western province. The public sector operates both on curative and preventive health care. The larger general hospitals and national programs are directly under the central government. The smaller hospitals and all grass root level preventive units are under the provincial governments. There is an extensive network of healthcare institutions in the country with each citizen lives within few kilometres of a health care institution. Primary care system is different, compared to United Kingdom, as there is no organized general practitioner system in Sri Lanka. Primary health care is provided through the smaller institutions, preventive care institutions and out-patient department of larger hospitals. Sri Lanka, at present, does not have organized medical record system on individuals in the country.

1.6 Health manpower in Sri Lanka

There are about 265 staff categories in the MOH in Sri Lanka. Main categories are doctors, nurses & midwives, paramedical services and Healthcare Assistants (HCA). Except, HCA's, all others are recruited by the central government. Required health manpower is determined (cadre) by MOH and Finance Ministry.

Final cadre determination was done in 1981 for main categories. Health manpower planning in Sri Lanka was episodic and non-comprehensive. There were multiple studies conducted at different times including as early as 1960's. One study titled "Better Health for Sri Lanka: Report on a Health Manpower Study." was conducted by Simeonov (1995) for all categories of health staff. In 2001 a national strategic development plan for nursing officers 2001-2010 was prepared. In addition, two presidential task force report in 1992 and 1996 have proposed recommendations on health human resource development. A further publication by World Health Organisation (WHO) has suggested Human Resource for health (HRH) development plan for developing countries including Sri Lanka in 2006. Health Master Plan 2007-2016 is currently accepted as the guiding document for HRH in Sri Lanka. Despite all these efforts and guides HRH in Sri Lanka had not been well planned and needed proper direction (Management Development and Planning Unit, 2016) (Ministry of Health - Sri Lanka, 2009).

There is no clear data on the percentage of doctors working in government sector, the private sector and in the university set up. According to the available figures, about 70% of Sri Lanka Medical Council (SLMC) registered doctors are working in the Ministry of Health. There are about 3% SLMC registered doctors working in the university set up. It is estimated that 12- 15% SLMC registered doctors are working in the private sector. However, the 12- 15% included the doctors who have retired from the government sector and working as individual general practitioners in the various parts of the country. It is also reported that nearly 25% of doctors are working abroad despite holding active registration with SLMC (De Silva *et al.*, 2013).

As explained earlier, there is no well-organized general practitioner system in Sri Lanka. General practitioners are 100% privately funded. The bulk of general practitioners comprises of doctors from public sector working outside their working hours. Thus, the majority of general practice opens outside routine

working hours (mainly from 7:00 to 8:00 and 16:00 to 20:00). Large private hospitals and retired doctors provide general practitioner service at other times.

The number of doctors has increased significantly over the last few decades. The number of medical officers increased, from 13.9 per 100,000 population in 1980 to 25.5 per 100000 population in 1995 and to 55.1 in 2007 (Medical Statistics Unit, 2008). The number of doctors per 100000 population had increased to 85 per 100000 population by 2014. As mentioned above, the Governments' Health Ministry is the number one employer for medical doctors in Sri Lanka. According to the 2013 data available, 16401 doctors employed by the MOH. However, there were only 64 medical officers in Mulativu district compared to that of 5344 in Colombo district (Management Development and Planning Unit, 2016). The number of doctors has increased to 17615 by December 2014 (Medical Statistics Unit, 2016). However, in recent years, a considerable number of doctors are employed by the private sector. Reliable information on the distribution of private sector medical doctors in the country is not available. However, most of the large private hospitals are concentrated in the Western Province of Sri Lanka. So, revalidation process should consider the ways of incorporation private sector employees to proposed revalidation system.

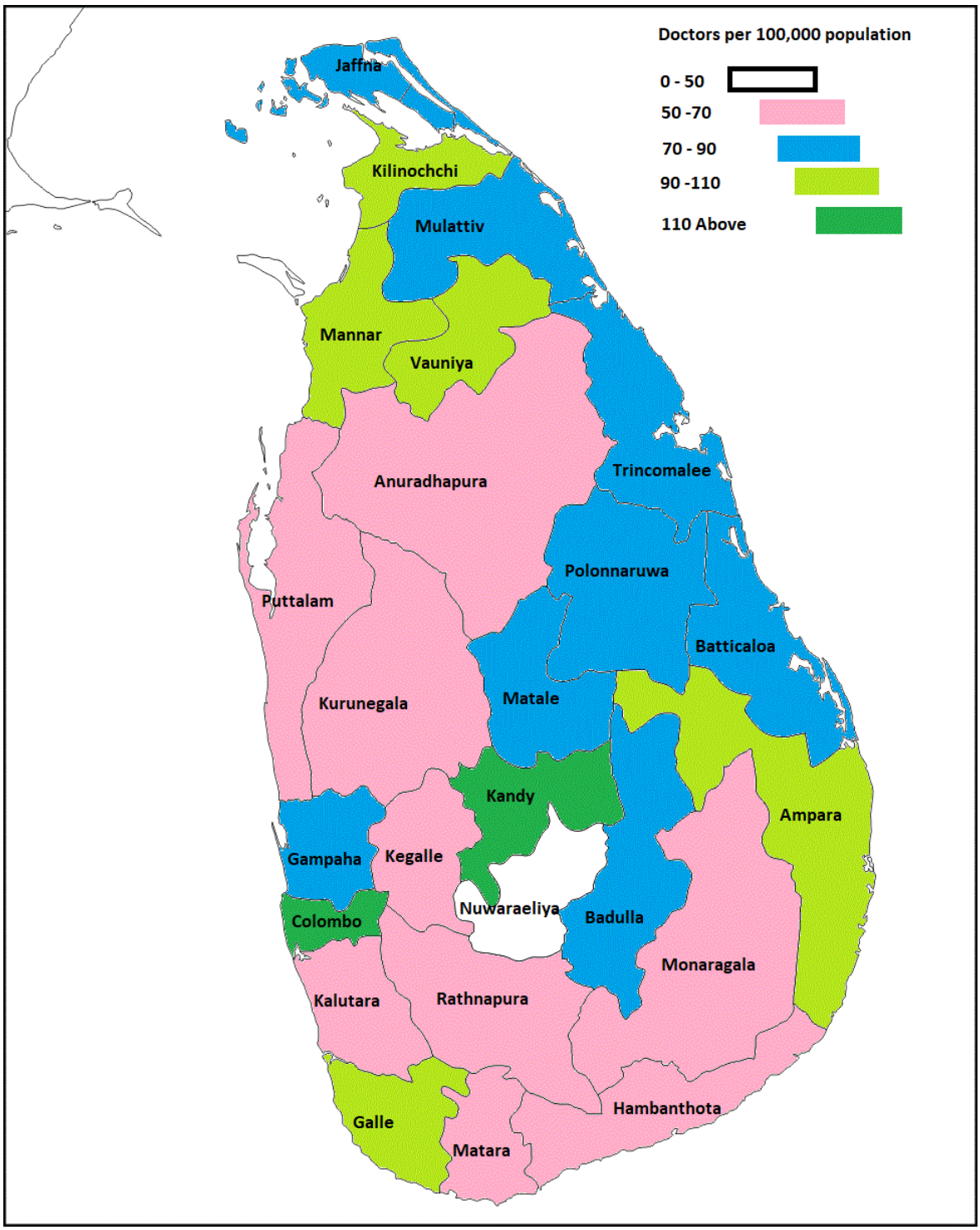
1.7 Distribution of Health Personals in Sri Lanka

Even though Sri Lanka is a small island nation, the development and the urbanisation had not taken place uniformly. Thirty-years of civil war had hampered the development of North and East provinces as well as some areas of North-Central and North-West provinces. Population density is comparatively low in above-mentioned areas and there is a lack of better schools, transport links, telecommunication facilities, lack of government infrastructure had made those areas unpopular among medical doctors and other government servants (Management Development and Planning Unit, 2016). Many doctors select these

areas as temporary places until they moved into a well-developed region. In 2015, there were 8 districts which have more than 87 Medical

Officers per 100,000 population. Those are Colombo, Kandy, Ampara, Killinochchi, Galle, Vavuniya, Mannar and Jaffna. Highest doctors' density was observed in Colombo district with 181 doctors per 100,000and lowest was in Nuwaraeliya district with 37 doctors per 100,000. Figure 1-1 shows doctors' density by the administrative district in Sri Lanka.

Figure 1-1: Distribution of Doctors in Sri Lanka According to Administrative Districts (Adopted from Annual Health Bulletin 2015 – Ministry of Health, Sri Lanka)



Sri Lanka has significant problems of maldistribution of doctors. Colombo district has 181 doctors for 100000 population while Nuwaraeliya district had less than 37 doctors for 100000 population (Ministry of Health - Sri Lanka, 2015). However,

doctors' density itself does not represent the full picture. Therefore, it is important to consider this distribution disparity along with other factors before implementation of a universal revalidation system in Sri Lanka. This problem is not limited to doctors but also common for all other health professionals as well.

According to the annual health bulletin published by MOH, it is clear that there is not only a gross maldistribution of doctors but also maldistribution of some specialist doctors and other categories of doctors in the country and shown in

Table 1-2 (Medical Statistics Unit, 2016). However, MOH had started steps to address the gross maldistribution of specialists recently.

Table 1-2: Distribution of Main Categories of Doctors by Regional Director of Health Services Division

Regional Director of Health Division	Grade Doctors	Specialist Doctors	Dental Surgeons	Dental Specialist	Admin Grade Doctors
Colombo	3824	463	214	30	90
Gampaha	1445	123	80	4	13
Kalutara	672	65	55	3	6
Kandy	1489	152	166	10	19
Matale	315	35	27	1	4
Nuwaraeliya	246	33	26	1	3
Galle	795	120	53	4	9

Matara	494	39	27	2	3
Hambanthota	330	46	26	2	5
Jaffna	441	59	38	1	8
Killinochchi	83	2	2	2	0
Mannar	82	14	9	0	2
Vauniya	156	25	5	0	1
Mulativu	55	0	4	0	0
Batticaloa	314	37	26	2	7
Ampara	296	32	23	1	2
Trincomalee	282	32	14	7	5
Kalmunai	273	15	26	0	5
Kurunegala	1029	75	76	4	10
Puttallam	413	51	22	1	4
Anuradhapura	524	76	30	3	5
Pollonnaruwa	286	35	23	0	3
Badulla	543	93	54	0	7
Monaragala	247	26	21	0	3
Rathnapura	555	74	57	2	7
Kegalle	468	39	27	5	6

One of the policy paper written by Prof Lalitha Mendis had stated the need for not only right numbers of doctors but also right mix of specialities distributed evenly to serve the population. The paper further suggested series of suggestions to improve human resource improvement in Sri Lankan context. These suggestions include

- setting up a comprehensive knowledge and information system for human resources requirement
- Adequately staffed human resource management unit at the MOH
- Use comprehensive human resource management software/ procedures
- National committee to oversee all human resource function comprised of different professionals
- Provision of adequate funding for human resource for health
- Prevent migration of doctors by increasing salary, establishing minimum service period before resigning, incorporate internship to MBBS degree

- Improvement of post-basic training of other health staff like nurses
- Stop ad-hoc changes to primary health care system (Mendis, 2010).

After the report, MOH had taken steps to address issues highlighted on the paper. This is discussed in detail at the chapter on discussion.

1.8 Western Medical Education and Training in Sri Lanka

Revalidation is directly linked to medical education and continuous medical/ professional education. Therefore, it is important to have a clear understanding of medical education in Sri Lanka in designing a revalidation and/or appraisal process. As mentioned above, the Western system of medical care was introduced to Sri Lanka first by the Portuguese and continued to thrive during the colonial period. However, the first medical education institution, Ceylon Medical College was established in 1870 during the British colonial era. The Ceylon Medical College became the Faculty of Medicine of the University of Ceylon and later Faculty of Medicine of the University of Colombo (Uragoda, 1987).

The second medical faculty was established in 1960, 90 years after the first medical faculty. However, two more new faculties were started in 1980's in Jaffna and Galle attached to state universities. There were four more universities commenced training doctor within next few decades (Fernando, 1997). At present, eight medical faculties are operating within the country. Until 1980's, the medical education was completely provided by the government sector, and there were no private medical schools. The medical education of the Sri Lanka was free of charge and selection to medical colleges were made based on the General Certificate of Education (GCE) – Advanced Level (A/L) – biology stream results. There is no other form of entry route for the prospective candidates. In addition, district quota is employed to select the fair distribution of opportunities.

The first attempted deviation to fully government medical education occurred in mid-1980's. However, the establishment of first Private Medical College in the early 1980s led to a mass protest by medical professionals and university students. This was backed by socialist parties like Janatha Vimukthi Peramuna (Wariyapola, 2017). Protesters cited that establishment of private medical education is detrimental to free education and free health. Because of the mass protests, the government had to absorb private medical schools into the government sector. In 2009, Sir John Kothalawala Defence University (KDU), commenced a medical education program outside the government sector. The KDU program goes without many protests as it was exclusively for defence personnel and for the foreign students. In 2010, South Asian Institute of Technology and Management/Medicine (SAITM) was granted permission to start medical education in Sri Lanka by the Ministry of Higher education and University Grant Commission (UGC). However, SAITM did not have the approval of SLMC. SLMC is the sole registration and regulation body for doctors in Sri Lanka and SAITM degree program is not accepted for medical registration by SLMC. The SAITM issue had brought forward the issue of the quality and standard of medical education to the surface.

The undergraduate program is conducted as a five-year full-time program offering MBBS degree at the end of the five years for successful candidates. The undergraduate program is conducted and regulated by the UGC. UGC is functioning under the Ministry of Higher Education. After obtaining the qualification, all graduates need to undergo further training called an internship in an approved hospital in Sri Lanka, the hospitals are under MOH. However, the internship program is monitored by the SLMC. At the end of the one-year program, the trainees can apply for full registration with SLMC. Medical education in Sri Lanka was traditionally based on British training model which was conducted in three broad sections. The three sections are pre-clinical training, para-clinical training and clinical training. However, since early 2000's most universities adopted more integrated curriculum which included more

clinical exposure from the beginning. Postgraduate medical education in Sri Lanka was started in May 1979 and the Postgraduate Institute of Medicine (PGIM), the University of Colombo is the sole institute for post-graduate medical education in Sri Lanka to date (Fernando, 1997). There are 76 different specialities recognised for specialist grade at present (Public Service Commission, 2014).

1.9 Standard of Medical Education and Standards of CME

The standard of medical education and the standard of medical doctors is now being discussed more extensively than it has in the recent times. This is due to the establishment of the private medical institution by SAITM. There is a wide spread demonstration against the SAITM at present. In addition, there is a legal battle between SAITM and SLMC (Ahamed, 2016). Minimum standards of medical curriculum and teaching have been discussed extensively at various levels. Standards of the medical curriculum and teaching were revised in 1980's and has not been updated recently. As a result, a judgement was given in favour of SAITM and court ordered SLMC to grant probational registration to SAITM graduates. However, SLMC appealed against the decision and the court case is under consideration in the appeal court of Sri Lanka. Government Medical Officers' Association (GMOA), the main trade union representing doctors, has strongly opposed the court's decision. Many professionals and political leaders have discussed standards of medical education and standards of continuing medical education (CME) in Sri Lanka. Government ministers have publicly criticised these standards and those of CME. One of the minister in a political debate publicly stated

"…….I have to state the truth, despite many people will try to politically assassinate the politician when he speaks the bitter truth. What I see with regard

to standardisation is that when a doctor was appointed and continued to work, the Sri Lanka Medical Council should have a mechanism to assess them and evaluate the annually. This system is not present in Sri Lanka. This is the main issue. We have a serious concern about some doctors and I am not talking about everyone. There is wide criticism on their concern to patients, negligence and many problems like that. However, GMOA had never talked about this issue or never had attempted to improve doctors' standards. So, whether we have SAITM or not, we have the problem of the standard of doctors. I talked about this as I should talk about and I have much evidence on this matter. Nobody had done anything on this so far……(Asia Broadcasting Corporation (Pvt) Ltd, 2017)*"*

Being the regulatory body, SLMC had attempted to formulate minimum standards for medical education for the last two decades with variable success. SLMC had recently prepared and submitted a document on the minimum standards of medical education to the ministry of Health. Various parties are accusing the health minister, for not signing and publishing the standards due to vested interests, which the health minister has denied. The document was prepared by an academic committee of SLMC after series of discussions among various stakeholders. In addition, there were many previous documents prepared in 2006, 2007 and 2009 by the SLMC on minimum standards for medical education which were not approved by the parliament and failed to become law. As a result of that, SLMC had prepared a guideline on the minimum standards for medical education in 2010. These guidelines are used as the basis of assessment of medical degree awarding institutions at present. But the court had decided that the mere guidelines cannot be used as a legally binding law (Wariyapola, 2017).

One of the spokesmen from SLMC had reported to the media

"…… Our guidelines were there since 2010 and it was a matter of conversion of the guideline documents into a gazetted document….. In this document, the format is a little different, …..It mainly consists of how the curriculum should be,

what is the student staff ratio, what are the areas that should be covered in the training programme, what are the subject areas and how much of the lectures and how much of practicals the students should have and what should be the qualification of the staff etc. This document covers a vast area in medical education and can be used when the SLMC wants to approve a medical college"

However, due to changes in educational level and an end of the 30-year conflict has resulted in an improvement of advanced level examination results, SLMC recently recommended three B grade passes as minimum entry criteria in its latest document which was previously 2 Cs and one S pass in the bio science stream. The latest SLMC minimum standard document not only considered entry criteria but also considered the quality of the teaching staff and the availability of adequate clinical training. The present proposal suggested a 700 bedded hospital for 100 medical students as a minimum clinical requirement. It further explains the need for different major specialities for teaching such as general medicine, general surgery, paediatrics, psychiatry and gynaecology & obstetrics. However, many critics complained about the facilities available for State Owned Rajarata Medical Faculty, Batticaloa Medical Faculty and Military-Owned Kothlawala Defense Medical Faculty.

In addition, the University Grant Commission (UGC), which is the authority for admission of students to state universities based on advanced level examination results had prepared subject benchmark document in medicine. The document was prepared by a group of senior medical lecturers from all medical faculties, an SLMC representative and other stakeholders. Similar benchmarking systems are available for other subject areas as well (University Grant Commission, 2010).

The medical education system in Sri Lanka has been brought to a standstill since January 2017. Medical students are not attending lectures and no groups of graduates are accepting internships in hospitals. In addition, there were series of

trade union actions by GMOA and other trade unions. Due to current discussions on standard of medical education and CME, the external environment is more favourable for a revelation process.

1.10 Medical Council and Medical Registration in Sri Lanka

The SLMC is the statutory, regulatory organisation established for protecting health care seekers by ensuring the maintenance of academic and professional standards, discipline and ethical practice by health professionals who are registered with it. SLMC was started during the colonial period as the Ceylon medical council in 1927 by an act of parliament. The act cited as the medical ordinance was subsequently amended on a number of occasions. SLMC is an integral part of the Machinery of Justice in the State. It was established by an act of Parliament act and is independent of the government. However, the SLMC is accountable to the Minister of Health. It has powers to

- Ensure proper standards in the teaching and training of health workers
- Ensure standards of western medical practice
- Registering and revalidating health care workers including doctors
- Regulating registered health care workers
- Discipline inquiry of professionals in fair and unbiased manner

The SLMC is governed by a board of members who are specifically stated in the medical ordinance and its subsequent amendments. However, there is wide criticism that only medical practitioners can be a member of the board as per the medical ordinance and therefore, it being too lenient on medical practitioners. The medical ordinance states “No person shall be eligible to be a member of the Medical Council unless he is a medical practitioner or a person entitled to practice medicine and surgery or a dentist” (Democratic Socialist Republic of Sri Lanka, 2014). Even though, this regulates physicians and has the ultimate power to remove the licence, this power is almost never exercised. In addition, the civil and criminal law does allow for cases to be brought against doctors on the

grounds of professional negligence/ misconduct, the litigation is rare owing to the difficulty of attesting these cases in the court of law and lack of patient awareness of rights (Rannan-eliya and Sikurajapathy, 2009).

Once qualified with an MBBS degree, all graduates are required to obtain provisional registration with SLMC and to work as intern doctors under supervision. The internship is given to all the local graduates and foreign graduates who completed Act 16 or EPRM exam. The placements are solely based on the merit order for the local graduates. Foreign graduates are placed at the bottom of the list based on the date of registration with SLMC (Rannan-eliya and Sikurajapathy, 2009). Once completed the internship, the intern doctors can get the full registration as a medical officer. There is no process for revalidation or scrutinising the standard of knowledge and care. Registration is covered in section 5 of the medical ordinance and amended on several occasions including1988 (Democratic Socialist Republic of Sri Lanka, 1988). At present, there is no legal provision for implementing mandatory revalidation. However, all registered doctors are required to renew registration every five years (Democratic Socialist Republic of Sri Lanka, 2014).

1.11 Recruitment and Promotion of Doctors in Sri Lanka

As discussed above, the majority of doctors working in Sri Lanka are attached to Ministry of Health (MOH) – Sri Lanka. Recruitment of Doctors to MOH is governed by the establishment Code of the Sri Lanka, Medical Service minute of Sri Lanka and circulars issued by the Ministry of public administration.

There are 6 categories of doctors working in the MOH in Sri Lanka. Table 1-3 summarizes the different categories of doctors in MOH and qualifications needed for absorption to each grade.

Table 1-3: Summary of Grades of Doctors in MOH (Sri Lanka)

Category	Description
Intern Medical Officers	All local MBBS graduates and foreign graduates with ERPM will required to work as an intern medical officer for 1 year under supervision. All should have provisional registration with SLMC.
Preliminary Grade	All doctors who completed the internship are recruited as Preliminary Grade doctors in the government service.
Grade II Medical Officer	At the end of two years all Preliminary grade doctors are promoted to Grade II if they have completed Efficiency Bar examination. There is no difference of clinical responsibility among preliminary grade, grade II or Grade I doctors.
Grade I Medical Officer	All grade II doctors get promoted to Grade I if they have Prescribed post graduate qualification – 6 years No prescribed post graduate qualification -10 years
Specialist Grade Medical Officer	Doctors who completed training program conducted by PGIM and obtained Doctorate in Medicine (MD)
Administrative Grade Medical Officers	Open to all doctors with post graduate qualification from PGIM. Priority is given to doctors with qualification in Medical Administration and Community Medicine. They have primary responsibility of management of institutions and no direct clinical works.

At present, all the doctors with the valid full registration of SLMC are eligible for recruitment as a medical officer in Sri Lanka on the salary category of SL2 – 2006. MOH calls for applications from all the qualified doctors and notices are published on the MOH website and the Government Gazette. Priority is given to state university graduates over the foreign graduates qualified with the

Examination for Registration to Practice Medicine (ERPM). All foreign MBBS graduates required to sit ERPM examination under section 29.1 (b) (ii) (cc) and 29.2 (b) (iii) of the Medical Ordinance. Selection will be made according to the merit order determined by the University Grant Commission of Sri Lanka. All selected graduates are recruited as a preliminary medical grade of MOH. Recruitment of dental graduates follows a similar path, but they are absorbed directly to grade II. The Public Service Commission (PSC) is the appointing authority for medical doctors. All Medical Officers employed as Preliminary Grade Doctors required to pass the Efficiency Bar Examination within 2 years from the date of appointment to get promoted into Grade II. The Efficiency Bar Examination consists of four subjects including Establishment code, Financial regulation, Hospital Administration and proficiency of second community language (Tamil/ Sinhala). Efficiency Bar Examination is compulsory for promotion to Grade II, Administrative Grade or Specialist Grade despite all the qualification. Failure of completion of Efficiency Bar Examination within two years results in losing ministry seniority, stopping of annual salary increments and the delay of many other benefits. All preliminary grade doctors are promoted to Grade II upon completion of two years of active service. Appointment to Administrative Grade and Specialist Grade required to obtained specific qualification as stated in the medical service minute. Promotion to Grade I require either six years' active service in Grade II with prescribed postgraduate qualification or ten years' active service in Grade II without prescribed postgraduate qualification. All medical doctors are recruited as permanent and pensionable officers in the government service. However, they are subjected to a three-year probation period as all other government employees. All government servant receives an annual salary increment after completion of the assessment form. The assessment form is common to all government servants and is prepared according to the format specified in the establishment code (Public Service Commission, 2014) (Democratic Socialist Republic of Sri Lanka, 1988) (Democratic Socialist Republic of Sri Lanka, 2014) (Ministry of Public Administration, 2013). So, revalidation and the cancelling of medical licence to practice can conflict with the existing medical service minute and requires amendments to medical service minutes and other relevant sections of the establishment code.

1.12 Comparing Health Care Status of Sri Lanka

Sri Lanka is a South Asian country with a unique health system. Many of the South Asian countries face an array of healthcare issues such as low life expectancy, high infant mortality, high maternal mortality, poor sanitation poor access to health care services, and widespread malaria. HIV/AIDS prevalence is second only to those of sub-Saharan Africa. In addition, South Asia is faced with emerging epidemic of chronic non-communicable disease. Sri Lanka healthcare system shows notable exception from the region. Life expectancy in Sri Lanka is very high compared to regional values and surpasses that throughout the rest of the South Asia by few years (Gannon and Haté, 2010).

Table 1-4 shows summary of relevant health statistics in South Asian countries (United Nations Development Programme, 2016) (WHO, 2017). Sri Lanka is the only South Asian country to rank below 100 human development indices and shows the high quality of healthcare provision despite low expenditure.

Table 1-4: Comparing Key Health Statistics Sri Lankan and rest of South Asia

Country	HDR 2016 Ranking	Life Expectancy (in years)	Maternal Mortality Rate (per 100000 live birth)	Infant Mortality Rate (per 1000 live births)	Malaria Prevalence	HIV Prevalence
Sri Lanka	73	74.9	30	8.4	0.0	0.01
India	131	67.4	174	37.9	4.1	
Pakistan	147	65.9	178	65.8	1.8	0.1
Bangladesh	139	71.0	176	30.7	13.9	0.1
Nepal	144	69.0	258	29.4	0.2	17

Sri Lankan health is unique with its own characteristics and considered as an outlier among developing countries as it is considered as one of the best cost-effective health systems in the world. There are many reasons behind the success of the healthcare system including high literacy rate, strong health infrastructure, qualified health staff, the small size of the island and political leadership (Gannon and Haté, 2010).

This study aims to change the human resource practice among healthcare workers in Sri Lanka. The change, if managed well, can improve the healthcare outcome of the country further. This will be discussed in more details in subsequent chapters.

1.13 Background of revalidation in Sri Lanka

There is no formal revalidation or CPD program for Sri Lankan medical professionals at present. The sociocultural environment has not been encouraging for such a program in the past. The environment had significantly changed since the last attempt of revalidation in Sri Lanka (Epa, 2003). Also, it should be noted that at the beginning of the UK revalidation program there was stiff resistance from various groups in The United Kingdom including British Medical Association (BMA) (Freidson, 2006). In addition, there are no reports on serious misconducts or scandals by doctors such as Shipman inquiry in Sri Lanka. Lack or reports could be due to lack of a proper reporting system and complaint handling system. In addition, hierarchal nature of health system and lack of knowledge of patients' rights may have contributed to the absence of such reports. Sri Lankan Constitution (1978) has a full chapter on fundamental rights of people of Sri Lanka. But the right to life and patient's rights have not been recognised as fundamental rights under the 1978 Constitution(Dayarathna, 2015).

However, multiple individual cases of medical misconduct and negligence have appeared in last few decades. Most of these incidents have been limited to newspaper articles and no proper inquiry was carried out. These individual cases and their impact are discussed in detail on chapter 2. The power of SLMC to erase the certification of doctors were hardly used in such incidences (Rannaneliya and Sikurajapathy, 2009). So, it appeares that revalidation can be a proactive strategy on improving patient safety, maintaining professional standards and improving overall quality of health care provision in Sri Lanka.

1.14 Personal Circumstances

I was born and studied in central Sri Lanka. I completed basic medical training from the faculty of Medicine, University of Peradeniya – Sri Lanka from 1997 - 2004. After passing as an MBBS graduate, I completed my internship program at teaching hospital at Peradeniya and obtained full medical registration with SLMC in 2006. I have worked as a junior doctor, middle-grade doctor and as a medical director in various parts of Sri Lanka. In addition, I was an elected member of central province GMOA committee. Furthermore, I have obtained the medical licence to practice in The United Kingdom and have NHS - UK experience of 2 years. This research includes stints of personal experience as a Sri Lankan citizen, medical student, a junior doctor, middle-grade doctor, trade union activists, medical administrator and as an international medical doctor working in a different social structure. I believe that this is immensely helpful as there is no adequate empirical evidence on certain issues discussed in the chapter. The distinct roles also helped me to get the insider advantage while keeping the role of an outsider within the research. The potential bias and advantages of being insider is discussed later in the chapter on methodology.

1.15 Aims and Objectives

The objective of the study was to develop a revalidation model for Sri Lanka using a low cost and quick approach. The specific research objectives of this study were to:

Explore different medical revalidation models in countries with comparable or better health systems to Sri Lanka.

Identify underlying principles of revalidation and develop a model for Sri Lankan medical professionals

Refine the revalidation model developed in Sri Lankan context using a mixed method approach

This research will contribute to the field of knowledge of medical revalidation among health care professionals. It will introduce expedited and low-cost model for developing revalidation system for other health care professionals and other developing countries.

1.16 Structure of the thesis

The thesis is organised into seven chapters.

Chapter 1: This chapter introduces the terminology and background of the study. It also summarizes key information on Sri Lankan health system, recruitment and promotion of doctors. Research aims and objectives was also discussed.

Chapter 2: This chapter will review studies on change management in relation to human resource practices, appraisal of doctors, CME, CPD and studies on their effectiveness on a historical basis. The primary consideration was to discuss historical studies on revalidation. It also, looks at the different models of revalidation in the world. In addition, pre-implementation and post-

implementation research evidence on the outcome of revalidation are also discussed.

Chapter 3: This chapter is dedicated to discussing the chosen methodology used to explore the research objectives. The chapter discusses the use of focus groups and in-depth interview as qualitative tools and structured questionnaire as a quantitative tool.

Chapter 4: this chapter is dedicated to initial model of revalidation process for Sri Lanka. This model will be tested in the qualitative and quantitative stage of the research.

Chapter 5: This chapter presents the results and analysis of the qualitative stage of the research.

Chapter 6: Chapter 7 is dedicated to discussing the analysis and the results of the quantitative stage.

Chapter 7: This chapter discusses the finding in the socio-cultural and economic settings of Sri Lankan health system, and it is also recommending steps in implementing revalidation process for Sri Lanka.

2 Review of Literature

This chapter looked at the other research evidence and information on array of topics important for revalidation. Literature review is organized to assimilate areas that are important in considering revalidation. However, central concepts of revalidation were given more weight as those areas are central to the topic under study. The topics discussed are

- Medical ethics and medical law
- Legal proceedings against Sri Lankan medical professionals
- Landmarks of revalidation development in UK
- Evidence on different revalidation models
- Evidence on effectiveness of different revalidation tools
- Using a prototype in development of new products

2.1 Medical Ethics and Medical Law

Medical ethics and medical negligence are crucial when discussing revalidation. Medical ethics on one hand guide revalidation as an ethical aspect of medical practice. Medical negligence and litigation against medical errors are also equally important as the latter brought a requirement for rechecking and revalidation of medical license to the surface.

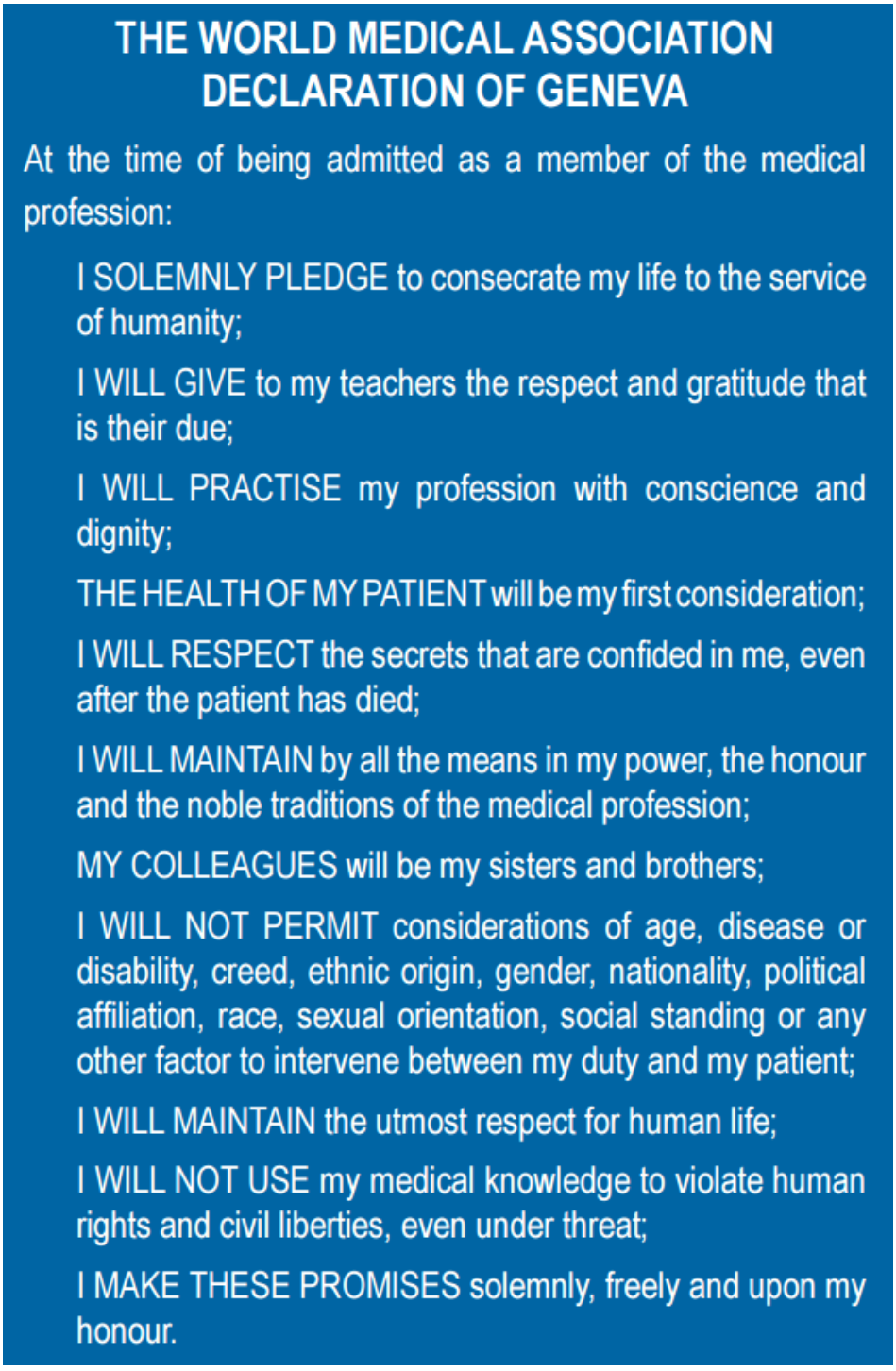
"Medicine is both a science and an art. Science deals with what can be observed and measured, and a competent physician recognises the signs of illness and disease and knows how to restore good health. But scientific medicine has its limits, particularly regarding human individuality, culture, religion, freedom, rights and responsibilities. The art of medicine involves the application of medical science and technology to individual patients, families and communities, no two of which are identical. By far the major part of the differences among individuals,

families and communities is non-physiological, and it is in recognising and dealing with these differences that the arts, humanities and social sciences, along with ethics, play a major role"(Williams, 2015).

Thus, even the same western medicine practising around the world have features unique to each locality. This uniqueness must be taken into account when deciding on changing or adopting a structure from another locality.

However, despite the difference in locality western medical practice is governed by basic ethical principles. All western medical professionals take the Hippocrates oath or its derivatives as recommended by World Medical Association. The current medical declaration was adopted at the 173rd world medical assembly in 2006 in France and the following figure illustrates the Hippocrates oath adopted at world medical assembly(Williams, 2015). Figure 2-1 shows the Geneva Declaration adopted at the 173rd world medical assembly.

Figure 2-1: Declaration of Geneva – Extracted from Medical Ethics Manual. 3rd edition, World Medical Association



THE WORLD MEDICAL ASSOCIATION DECLARATION OF GENEVA

At the time of being admitted as a member of the medical profession:

I SOLEMNLY PLEDGE to consecrate my life to the service of humanity;

I WILL GIVE to my teachers the respect and gratitude that is their due;

I WILL PRACTISE my profession with conscience and dignity;

THE HEALTH OF MY PATIENT will be my first consideration;

I WILL RESPECT the secrets that are confided in me, even after the patient has died;

I WILL MAINTAIN by all the means in my power, the honour and the noble traditions of the medical profession;

MY COLLEAGUES will be my sisters and brothers;

I WILL NOT PERMIT considerations of age, disease or disability, creed, ethnic origin, gender, nationality, political affiliation, race, sexual orientation, social standing or any other factor to intervene between my duty and my patient;

I WILL MAINTAIN the utmost respect for human life;

I WILL NOT USE my medical knowledge to violate human rights and civil liberties, even under threat;

I MAKE THESE PROMISES solemnly, freely and upon my honour.

No matter the country you live, no matter the type of medicine you practice medicine, being a medical doctor has meant something special. People seek help from medical doctors for help with their most pressing needs such as liberation from suffering and restoration of well-being. People let medical doctors see, touch and manipulate even the most intimate parts of their mind and body. They trust the doctor will act in their best interests at all the time. The status of medical doctors differs from one nation to another. However, confidence and the status of doctors are deteriorating all around the world. Increasing number of people now not accepting medical doctors' recommendation automatically. They question physicians and ask them to defend their recommendations. The questions can be based on information obtained from another professional or even from unverified internet sources. In addition, the medical landscape has changed. Today, some of the procedures and treatments are provided by medical technicians and other paramedical staff. Even the non-clinical management has shifted from physicians to professional managers. Many of them do not possess sound medical knowledge. Despite this, being a medical doctor continues to be highly valued by the people and society who need its services. Despite these environmental changes, medicine attracts most gifted, hardworking and dedicated students. It is still considered most difficult university degree programme in the world.

However, there is a continuous debate on the appropriateness of acts of individual doctors as well as professional organisations. The public now increasingly questions about the competency of their doctors. In a study carried out in the USA, it was revealed that nearly 5% of patients had complained of medical malpractices. However, the majority of this study participants believe that there are too many malpractices claims in the USA. It was also revealed that these unnecessary lawsuits had contributed to rising healthcare costs in the US. However, it further revealed that these malpractice claims had no real impact on physicians practice or future outcomes(Chandra, Durand and Dickens, 2009).

In addition, there are a number of documented cases against unethical and illegal actions of doctors. Deaths in the hospital are increasingly investigated since the last decade in The UK and it has increased by threefold during the last 10 years(Griffiths and Sanders, 2013). In addition, medical manslaughter cases, despite small in number, attract extensive media coverage and can have a significant impact on both public opinions on medical professionals and attitude of doctors. Also, there can be the serious impact of the attractiveness of medical specialities and way of practice among medical professionals. It was revealed that certain specialities such as surgery, anaesthesia, and obstetrics are particularly vulnerable to criminal prosecution. Medical professionals have become more defensive in their decision making due to the fear of litigations. A recent survey has reported that 90% of doctors are more defensive in their decision making due to fear of litigations. In addition, doctors reported being less open about their mistakes due to increasing involvement of the law. Following the conviction of senior colorectal surgeon David Sellu for gross negligence manslaughter in 2013, many senior medical professionals have raised their concern on the apparently increased involvement of the criminal process in healthcare. As a result, the Royal Colleges has agreed to facilitate a meeting with all stakeholders including the Coroners Service, Ministry of Justice and GMC on the criminal process in healthcare (Vaughan, 2016). However, public opinion on alleged medical negligence showing that public does not fully supportive of doctors. In 2008, Kay, Green, McDowell and Ferner conducted a survey in Birmingham. It involves medical professional and public discussing four real-life cases of medical negligence. The study revealed that public wants the doctors to be charged with manslaughter in some instances of malpractices. It was also reported that public opinion that medical professional should hold individual responsibility on the death of patients (Kay *et al.*, 2008).

2.2 Medical Ethics and Medical Law

Professor Carlo Fonseka is one of the most respected physicians in the country and is the president of SLMC in Sri Lanka. In his article published in British Medical Journal in 1996, he had described five fatal mistakes during 36 years of his medical career. He has not had any medical negligence lawsuit against him for any of them. Key messages from his article are worth citing here.

"The natural reaction of doctors to errors is to hide them or to rationalise them away"

"It is unscientific and unethical to refuse to face our errors"

"There is no cathartic ritual in our profession to expiate the sense of guilt generated by our errors"

"Since knowledge grows mainly by error recognition, facing our errors squarely is the path to medical wisdom" (Fonseka, 1996).

Socio-cultural landscape in the country has changed significantly over last two decades in Sri Lanka. There is increased the risk of medical negligence cases against doctors. There were many medical negligence cases filed in the court of Law in Sri Lanka. It is worth considering some of them here as they have contributed to public and media perception on clinical negligence and perception on doctors. One of the landmark cases of medical negligence in Sri Lanka was Arsekularathna v. Priyani Soyza. This case had highlighted many aspects of the social justice system and professional behaviour. The researcher believes that this was, in a way, similar to Shipman Inquiry or Bristol Inquiry in the UK. The plaintiff was a then very high-profile law official in Sri Lanka and the defendant was one of the famous professor of paediatrics in the country. Plaintiff's daughter was a 4-year-old girl apparently, healthy child who died within two months of becoming ill of Brain Stem Glioma. Dr Priyani Soyza was accused of not diagnosing Brain Stem Glioma and in the misdiagnosis of Rheumatic Chorea. The case has gone through the full court system in Sri Lanka from the district court to appeal court and then to the supreme court and the trial has lasted nearly

a decade. The District Court supported the Plaintiff's case and ordered Dr Soyza to pay Rs. 5,000,000 as the compensation and ordered to pay the legal costs. On delivering the verdict the lower court judge had stated “In my view misdiagnosis can be non-diagnosis. Misdiagnosis is the wrong diagnosis. The wrong diagnosis is no diagnosis”. However, Dr Soyza appealed against the decision but the appeal court upheld the original decision. However, she was only ordered to pay as lower compensation to cover up the medical costs and legal costs. The decision to upheld decision was not as same reasons for the original verdict. Thus, Dr Soyza appealed again in the supreme court. The supreme court overturned the decision made by the district court and appeal court. In delivering the verdict supreme court had stated “mere misdiagnosis or non-diagnosis of a disease by itself does not amount to negligence” and supreme court critical of its lower benches and stated, “Attention of both the original court and appeal court appear to have been diverted to many peripheral matters which have no nexus or relationship to the alleged culpable act of negligence”. There was a broad range of reactions to the outcome of the court case at various stages. One of the national newspaper published a headline “Doctors Beware” and editorial had stated *“Mr Thilakarathne’s incisive and perspective judgment goes right to the heart of the disease values that have clogged the arteries of the doctors particularly the specialists and numbered all their values and sensitivities except the muscles below the wrist that function to collect fees…. Mr Thilakarathne’s Judgement will come as a great relief to the clear majority of patients who have suffered in silence without any recourse to any kind of justice. Doctors have been thriving in the medical market where demand is greater than the supply. Knowing that they are in a privileged position they have been riding roughshod over the underprivileged. Even if the judgment fails to rouse the conscience of doctors it should at least make them aware that the society is now ready to condemn their arrogance, unethical behaviour and inhuman attitude towards the poor patients*” (Fernando, 2002)(Rupasinghe, 2015).

However, the stance of many of the professionals were different and Dr Ravindra Fernando in his article concluded by stating

"What is sad about this 9 year episode was that a dedicated professional, who spent her entire professional career saving lives of poor children in many parts of the country, suffered for not doing the impossible" (Fernando, 2002).

In my opinion, this court case questions brought forward many issues to Sri Lankan medical society including but not limited to

- External influence in court system in Sri Lanka – It appeared that there were many influences on verdict in lower court and appeal court
- Would it be possible to bring forward a litigation against doctors by poor people in the country or justice limited to affluent and rich?
- Was there a communication gap between doctor and parents of the deceased child?
- Is there a problem with communication skills of some of the Sri Lankan doctors?
- Is there any method of proving Sri Lankan doctors are up to date with knowledge and skill?
- Is it ethical giving evidence against a colleague? Has professional jealousy or competition for private practice brought this saga?
- Does Sri Lanka need a better complaints investigation system for health sector?

Interestingly, similar questions have been raised in the UK and other developed countries in the past. The revalidation process was intended for answering some of the questions. In my opinion, this case has provided the basis for the understanding of the requirement of continuous professional development, medical ethics and importance of communication skills, need for revalidating skills and knowledge of medical professionals in Sri Lanka. The litigation against doctors did not ended with that but seems to increase over last decade. There were many medical negligence and malpractice cases brought against doctors.

The plaintiff, a law student, Achala Priyadarshani was awarded 100 million compensation for medical negligence resulting in the amputation of her arm and Baby Kavindi Abeysekara was awarded 10 million rupees for amputation her finger immediately due to medical negligence soon after her birth at the De Soyza Hospital in 2005 (Rupasinghe, 2015).

In 2005, a 48-year-old mother had her wrong leg accidentally removed, whilst another died after transfusion of an incompatible blood at the Government Hospital - Negambo. In another report, A 24-year-old Low students left arm was amputated due to improper intravenous drug administration. Similarly, a 5-year-old girl died in a leading private hospital in Colombo when she was taken for an MRI Scan from possible anaphylaxis and did not have monitoring or treatment facility on site for the reaction. Even many incidents appeared in Sri Lankan media, they hardly come before courts of law. However, few cases was heard in courts in recent past. The case of Priyani Soyza v. Arsekularathna 2001 is a very famous as accused is a professor of paediatrics while the was a high-rank law official. Even in that case, plaintiff's claim failed but the verdict had indicated the medical negligence associated with that case. However, causation was unable to establish the medical negligence and cause of death (Dayarathna, 2015) (Fernando, 2002).

Therefore, minimising medical negligence and improved patient safety is very important in current medical practice not only for patient safety but also for doctors' safety as one mistake can ruin all their earning, reputation and right to practice. A more recent high-profile murder case inquiry found that the retired JMO Professor Ananda Samarasekera had violated medical ethics by the suspected misplacement of the bones of the late Wasim Thajudeen. During the original autopsy carried out by Professor Ananda Samarasekera, he reported the cause of Wasim Thajudeen's death as due to an accident; however, the second autopsy revealed that the rugger player was murdered. In the political arena of the country, former presidents' sons are accused of this assassination(Weerarathne, 2016).

In summary, change in the social environment had changed significantly which resulted in change of perception on doctors. People increasingly sought help from legal system on suspicion on lack of care they received from doctors. As a result, there is a need of mechanism to prove doctors are knowledgeable and updated to provide accepted standard of care.

2.3 Keeping Up-To-Date

Many medical regulators have provided written information for doctors on the importance of keeping their knowledge and skill up to date. In the UK, GMC provided this essential information on their key booklet on Good Medical Practice (GMP). According to the GMC guidelines all doctors

- must keep knowledge and skills up to date
- must recurrently attend in activities that sustain and develop clinical competence and performance
- must be familiar with guidelines and new developments that affect work
- must keep up to date with, and follow, the law, our guidance and other regulations relevant
- must take action to monitor and expand the quality of work (Snape and Elliott, 2014)

There are diverse ways doctors can make themselves up to date. This can be an extensive list option. However, most common methods include discussions with colleagues, attending teaching programmes, attending online programmes, reading of journals/ textbooks, attending practical skill development programme and attending for short-term clinical assistant programmes in other specialities. Whatever the method used, the individual doctor should choose their methods based on his self-evaluation, evaluation by others and patient needs (Harding, 2015)(Laine and Weinberg, 1999). GMC has identified four key domains on which doctor should evaluate and maintain their competencies on and include

- Knowledge, skills and performance
- Safety and quality

- Communication, partnership and teamwork
- Maintaining trust (Snape and Elliott, 2014)

Continuing Medical Education (CME) and Continuous Professional Development (CPD) are two terms that are closely associated with keeping knowledge up to date. CME is a specific form of continuing education that helps professionals in the medical field to maintain competence and learn new developing areas of their field. CME activities take place in different formats, such as live events, written publications, online programmes and electronic media. CME content is developed, reviewed, and delivered by experts in their individual clinical areas (Ahmed and Ashrafian, 2009). CPD is very similar to CME but encompasses broader perspective. CPD includes development areas such as communication, attitude, attire etc., and for doctors it is defined as

"a continuing process, outside formal undergraduate and postgraduate training, that enables individual doctors to maintain and improve standards of medical practice through the development of knowledge, skills, attitudes and behaviour, CPD should also support specific changes in practice"

by Directors of CPD Subcommittee of Association of Medical Royal Colleges (General Medical Council, 2010). However, critics of CME complain that pharmaceutical firms often use financial aid to bias CME towards marketing their products. CME is important to improve the quality of care towards patients and will help in revalidation, but there are serious concerns about unethical marketing inside the mask of CME. Since CME is a part of revalidation and physicians tend to attend the programmes offering CME points, the pharmaceutical companies can use the opportunity for unethical marketing of their own products. This is potentially a significant issue in Sri Lankan settings. In Sri Lanka, where there is no formal CME process, there is a risk that pharmaceutical companies can take a leading role in CME process. Therefore, regulation of CME/CPD providers is required. For example, in the United States, there were there were 736

accredited CME providers, including 270 physician membership organisations, 150 for-profit medical-education companies. Funding sources for some of the entities remain obscure in some of them. However, it was reported that more than half a billion dollars was obtained from commercial funding (Morris and Taitsman, 2009).

One of the most important questions about CPD or CME activities relates to the effectiveness of these programmes. There were many studies with conflicting results. However, in general, evidence shows that CPD has a positive outcome on clinical outcome indicators. There are different processes used in CPD and many studies have been carried out to assess the effectiveness of these processes. The Cochrane review funded by World Health Organisation (WHO), showed that educational meeting such as lectures alone or in combination with other interventions can improve professional practice of doctors and clinical outcome of patients (Forsetlund *et al.*, 2009). These improvements were found to be small and similar to other CME activities such as educational outreach visits, audits, feedbacks. It has shown that the combination of activities and mixing different methods such as interactive and didactic formats can improve the outcomes. In addition, focusing on outcomes that are likely to be serious nature can result in improved results. However, educational meetings alone were unlikely to change complex behaviours. The Cochrane study further highlighted the lack of evidence in low and middle-income countries. There were only 11 studies in developing countries compared to 70 of developed countries. Therefore, it is questionable to generalise the finding of the Cochrane study. Also, the study identified different obstacles for effective implementation of CPD activities in developing countries. Those include financial costs, lack of other resources, shortage of staff and heavy demand on health services. Thus, the report recommended substantive external support for the success of CME activities in developing countries (Forsetlund *et al.*, 2009). This is important as it identified that resource allocation would be an obstacle in implementing revalidation programme in Sri Lanka. Even though Sri Lanka is a middle income developing country, there are key differences compared to other middle-income countries in health care. These will be discussed more in later in this chapter.

Problem-based learning (PBL) is a method of interactive learning, said to be more effective than traditional methods in terms learning skills, and more enjoyable. PBL provides a learning atmosphere in which competence is acquired through encouraging an inquisitive style of learning rather than by traditional teaching or spoon-feeding techniques. Small group discussions and patient-oriented problem-solving has shown positive cognitive effects on student learning in undergraduate medical settings. Thus, more and more medical curricula have adopted this style of teaching. However, an adaptation of these techniques in CME activities is relatively novel. Postgraduate medical education and CME significantly differ from undergraduate medical training as it is more focused is on improving existing competence, improving performance skills and sometimes replacing old practices and changing behaviour according to environmental requirement. However, Cochrane review concluded that there is limited evidence that problem-based learning increased doctors' knowledge, performance, and patients' health more than no educational interventions at all. However, doctors were more satisfied with problem-based learning compared to traditional learning. Therefore, style of CME programme can influence on acceptance of the programme. However, more evidence is needed on the use of problem based learning in CME(Smits, Verbeek and de Buisonjé, 2002).

In a Cochrane study among carefully selected studies shows that interactive CME activities show evidence of performance improvement while traditional didactic lectures do not improve the performance. The study included 14 studies from different countries. All 14 studies only included practising physicians. Researchers identified 17 outcomes measured to compare after applying strict criteria. The outcome measures belonged to following specific domains. Those were

- prevention and screening of disease
- clinical management
- counselling and communication skills
- smoking cessation advice

- practical skills

The results showed that some evidence that interactive CME sessions can enhance practice skills and therefore effect change in clinical practice and, thereby, clinical outcomes. However, didactic sessions alone did not appear to be effective in changing the performance of medical professionals and clinical outcomes (Davis *et al.*, 1999). Further, it is shown that broadly defined CME intervention using practice-enabling or reinforcing strategies consistently improve physician performance and health care outcomes (David, et al., 1992). Therefore, designing of mixed method CME or interactive CME can be more helpful in a formal CME process.

Continuous Professional Development (CPD) is becoming a popular mode of learning worldwide. Professional activity helps to maintain, develop or increase knowledge, problem-solving, technical skills and professional performance standards with the aim that physicians can provide better healthcare. Research studies conducted in different settings have shown that locally designed pay for performance systems can have better results on the continuation of CPD programme. In a study conducted in the UK, quantitative and qualitative analysis of NHS settings at 12 different sites has shown that locally designed pay by performance systems which include CME/CPD to be superior to externally implemented systems (Kristensen, McDonald and Sutton, 2013).

There is not enough research regarding CME activities in the developing world. Also, it is reported that some of the doctors in developing countries are not aware of revalidation. Doctors in many low and middle-income countries do not require revalidation or minimum CME point to renew their medical license. Instead, CME activities are functioning as either luxury or a social gathering for doctors mainly sponsored by pharmaceutical companies. It further highlighted the need for immediate implementation of formal and mandatory CME programmes. However, lack of structural support, legal provisions and scarcity of resources are identified as obstacle for implementation of formal and mandatory CME programmes. However, the authors suggested that the initial introduction of

voluntary CME or incentive based CME activities to start with (Beshyah, Saadi and Sherif, 2012). In another study conducted in India to look for the hospital, peer review system assesses the performance of resident to improve the safety of patient care and improvement of quality have found that there is a significant percentage of reviewed had shortcomings that can affect the patient care and outcome measures. The article recommended peer review process for other medical institutions to help improve house resident education, facilitate attending regular supervision, and improve patient safety and quality (Kim *et al.*, 2014). One recent study had looked at the use of social media for CME activities and found out that users of Facebook, Twitter, LinkedIn, Google+, and Wikis had positive attitudes regarding the use of social media in CME. However, demographic characteristics such as age have a profound effect on using social media. So, they have recommended that introduction of social media driven CME programme for more young, technology-savvy doctors and that social media will become increasingly valuable as CME tool as newer generation continues to enter the medical profession(Wang *et al.*, 2012).

2.4 Appraisal of Doctors

An appraisal is a fundamental component of revalidation in almost all the countries who have implemented revalidation or similar process. Multisource feedback (MSF), or 360^0 employee evaluations, is a questionnaire-based assessment in which rates are evaluated by peers, patients, and coworkers on the key performance of an employee. This system is widely used in industrial settings to assess performance. MSF is gaining recognition as a quality improvement method in health systems. Therefore, reviewing of literature on medical doctors' appraisal is important. Appraisal/ individual performance review is frequently used in human resources management in the public and commercial sectors to evaluate the performance of an employee. It measures performance against agreed organisational expectations and objectives. The results are used in career development and future recruitment decisions, pay scale decisions and

in many human resource activities. In the publication on *Supporting Doctors, Protecting Patients,* the Chief Medical Officer defines appraisal as: "Appraisal is a positive process to give someone feedback on their performance, to chart their continuing progress and to identify development needs. It is a forward-looking process essential for the developmental and educational planning needs of an individual" and GMC defines doctors' appraisal as "The General Medical Council regards appraisal as "a process to provide feedback on doctors‟ performance, chart their continuing professional development, and identify their developmental needs" (NHS Professionals, 2006).

360-degree feedback or Multisource feedback (MSF) has been recommended for assessment of physician by many regulators including GMC. The regulators recommend MSF as it assesses broad range of competencies. The purpose of MSF to have multiple aspects and multiple views from a range of people to comment on within the framework of physicians' functions. The range of assessment then compared with physicians own self-assessment. The results of comparison between two can be used to address and change their behaviour and to improve the clinical performance. MSF is additionally used in self-development(Arnold *et al.*, 1998). Many sub-specialties in Medicine including family medicine, internal medicine, anesthesiology, have used MSF for this purpose Numerous paper-based and electronic tools have been developed for appraising doctors on a range of their functions and have been in use for some time. These tools provide uniform and credible feedback on clinicians' performance. Systematic reviews had reported that physicians have limited ability to recognise their own performance weakness based on the feedback provided by external groups. Thus, external assessment by different parties is recommended for more relevant and objective assessment(Davis *et al.*, 2006). However, evidence related to the outcome of MSF is conflicting. Some research suggests that MSF can bring improved performance while some research articles suggested it does not. A comprehensive meta-analysis of over 600 appraisal systems, not limited to physicians and medicine, reported that one-third showing improved performance, one-third without any change and one-third decreased performance (Kluger and Denisi, 1996). An observational research study

conducted in Netherlands found that 55% of specialists reported that their professional performance has increased because of MSF. Regression analyses revealed that the perceived quality of mentoring and MSF ratings from colleagues are important motivators for participants' performance change. Socio-demographic variables had no influence on the performance change (Overeem *et al.*, 2012).

In a healthcare setting, MSF is likely to succeed if care is placed on the designing of the tools to represent the structural and psychodynamic aspects of the health system. Commonly used MSF in health care looked at six domains of physicians' functions. The six domains are patient care, medical knowledge, practice-based learning, interpersonal skills, professionalism, and systems-based practice. However, these domains need to be in-line with the health system. Successful MSF appears to be dependent on many factors including organisational support and psychometric design of the MSF. Effective communication has shown to be one of the most important aspects of successful implementation of MSF. Both physician and his raters need to be fully aware of the purpose and goals of the MSF and use of data gathered in MSF. However, MSF is not recognised as the base method of assessing some domains mentioned above. For example, medical knowledge probably is better assessed more precisely through multiple-choice questions or other traditional means of examinations. Similarly, audits can be more representative of the quality of care provided for patients. MSF tools can be designed to be reliable enough to assess the physicians' performance (Lockyer, 2003). Another study by the same author regarding MSF looked at three MSF tools used in three countries to check whether they meet criteria for good MSF or not. The researcher looked at the Canadian Physician Achievement Review instruments (PAR instrument) and the United Kingdom's GMC and CFEP360 instruments. The Canadian instrument uses 4 separate questionnaires to the patient, medical colleagues, other co-workers and for self-assessment. GMC – UK tool has only two with one for patients and a generic form for coworkers. Even though three tools were not designed to assess on exact objectives, there were many similarities between three tools. All three tools were found to have validity, reliability, equivalence, feasibility for the purpose,

and acceptability. However, educational effect, which considers whether those who participate are motivated, was not adequately assessed by any of the tools. The catalytic effect, which looked at whether the results and feedback create, enhance, and support education to drive future learning, were not available for GMC- UK tool (Lockyer, 2013). As these tools are shown a lot of consistency and similarities, they can be used as a prototype for the development of new tools for Sri Lankan context. For example, Sheffield Peer Review Assessment Tool (SPRAT) developed and implemented in the UK successfully. It was translated to Japanese and used in Japan with similar effects. However compounding factors such as assessor selection, seniority of the assessor, the length of the assessor–assess the relationship, and the assessor's job role found to have significant effects on the scores (Sasaki *et al.*, 2015). Wood, et al discussed tips on developing successful MSF tools to be used in healthcare settings and have identified 10 key tips on developing tools

- Develop a positive culture
- Be clear about the purpose
- Clearly, express any desired behaviours
- Keep the number of items to be scored few
- Keep the scale simple and fit-for-purpose
- Use six to 10 raters
- Compare results with self-assessment
- Train those giving feedback
- Involve the assessees
- Incorporate development

There is a need for continued dialogue among all stakeholders throughout the development process for best outcome(Wood *et al.*, 2006). One of the main obstacles for the development of MSF tools in medicine was the range of specialities and sub-specialties within the medical field. There are arguments that we need different tools for different specialities. However, a high number of tools can complicate the assessment process and can hugely impact on the cost of the programme. One of the alternatives is to use a single generic format in all specialities. A study conducted in the UK found that It is feasible to use a generic

questionnaire to a large population of doctors and found that generic forms are suitable for most specialities (Mackillop *et al.*, 2011). One MSF tool may be more suitable for a country like Sri Lanka and this is discussed further later in this chapter.

There are critics for use of MSF to assess the performance of medical professionals. At present, there are multiple formats for assessment of different specialities in medicine. However, researchers have shown that these forms do have drawbacks. In one study, 12 GPs and 12 appraisers, who had recently completed the GMC multi source feedback questionnaires, were interviewed over the phone using a semi-structured questionnaire. The qualitative data collected was assessed using thematic analysis and reported that participants appreciated multi source feedback as a portion of the formative assessment. However, some concerns about certain components of MSF methodology undermines its ability to identifying mediocre performance. Some of the participants reported the difficulty of identifying benchmarks while some raised concern about their scores. Also, there was some tension between the appraiser and appraisee on some occasions and some participants pointed that MSF did not improve learning and professional development (Hill *et al.*, 2012). However, general practitioners recognised that MSF offers the opportunity to mirror on their professional and education activity. Furthermore, there is a solid perception among general practitioners' that MSF encourages changes in professional practice. In addition, benefits such as mentorship and motivational support for the doctor is expected from the MSF (Mugweni, Kibble and Conlon, 2011). However, a study conducted in West Lincolnshire Primary Care Trust has revealed that a better understanding of knowledge, beliefs and attitudes towards appraisal is required to foster positive attitudes. Further, it emphasises the need of clarification on the relationship between appraisal and revalidation (Middlemass and Siriwardena, 2003).

2.5 Need for Revalidation

Revalidation is the process of regular assessing fitness to practice of licensed medical professionals. The revalidation reflects the diversity of the medical profession and assesses based on their chosen field. Holding GMC's license to practice reflects that the doctor is continued to meet the professional standards. Revalidation expected to give extra confidence to patients on their doctor's knowledge and skills. GMC expected that the revalidation will improve the quality of care received by the patients in the UK (General Medical Council, 2017). The United Kingdom has introduced a comprehensive revalidation system for medical professionals from late 2012. Prof Peter Rubin, Chair of GMC highlights was the first doctor in the UK to be revalidated. He praised the support GMC received from UK patient organisations. He further highlights the benefits of revalidation and the expectations for its development in the future(General Medical Council, 2012b). However, due to the diversity of specialities, there is no single appraisal system suitable for all medical professionals (Snape and Elliott, 2014).

Even though most developing countries do not have a performance assessment system, many developed countries have evaluation system on doctor's fitness to practice. In the USA and Canada, the processes for ensuring that physicians maintain their competence depend on the independent and heterogeneous regulatory decisions of each provincial College of Physicians and Surgeons. The means is usually by attending mandatory CME activities. However, research has shown it lacks consistency (Levinson, 2008). More detailed on these are discussed below in this chapter.

A qualitative study conducted In the USA on perception on revalidation has shown the need for frequent changes and standardisations of the appraisal and assessment of surgeons. It identifies necessity of revalidation but issues that could hamper the revalidation was also highlighted. Many concerns were expressed on the reliability and validity of existing and proposed systems

(Cuschieri *et al.*, 2001). Another study has shown that Australasia (Australia, New Zealand and Singapore) is in the process of developing tools for revalidation. However, there was no uniform structure for revalidation in these countries, where the responsibility of revalidation lies with professional colleges (Newble, Paget and McLaren, 1999).

In a study conducted in South East Asia, it has been identified that there is a need for changes in present postgraduate medical education. In most countries, however, there are isolated and uncoordinated continuing medical education programmes. The College of Physicians and Surgeons Pakistan has started a dialogue among stakeholders regarding the introduction of revalidation programme in Pakistan but did not move due to various obstacles. The comparable situation occurred in India and Sri Lanka. It was suggested that to develop a standardised continuing medical education programme was should be an initial step followed by a performance appraisal system for the region (Mendis *et al.*, 2004). However, there were no published studies on knowledge on revalidation of medical professionals in South East Asian region. In Sri Lanka, there had been a debate on introducing revalidation since 2003. An article in the Ceylon Medical Journal discusses the possibility of introducing a revalidation system in Sri Lanka. It was based on discussions held by the revalidation committee of SLMC. Further, it discusses how to face resistance from various groups including medical professionals and their trade unions (Epa, 2003). A study conducted to assess the knowledge and perception on revalidation have reported the need for starting CPR programme and obstacles of starting a revalidation process at present (Kavisekara and Sanjeewani, 2017).

There are different models of revalidation including GMC –UK model. These models are discussed below in this chapter in details with evidence supporting each model.

2.6 Rationale for Focussed Review of Literature by country

In this section, I considered revalidations models in different countries with the comparable health care system to Sri Lanka. The Sri Lankan health system is unique and considered one of the best cost-effective systems in the world. Even though, Sri Lanka lies in seventy-third place in Human Development Index, its health care outcomes are far better than some of the countries which have a high ranking. In human development report 2016, there were 51 countries in very high human development (VHHD) range. Some of the health statistics from Sri Lanka were better than those of VHHD countries.

Table 2-1 shows some of the health statistics in VHHD countries and Venezuela as latter being the closest in human development ranking(WHO, 2017) (United Nations Development Programme, 2016).

Table 2-1: Comparing Sri Lankan Health Statistics with VHHD Countries as Sri Lankan Health is Comparable with VHHD countries

Country	HDR 2016 Ranking	Life Expectancy	Maternal Mortality Rate	Infant Mortality Rate
Sri Lanka	73	74.9	30	8.4
Venezuela	72	74.1	95	12.9
Kuwait	51	74.7	4	7.3
Saudi Arabia	38	74.5	12	12.5
Qatar	33	78.2	13	6.8
United Arab Emirates	42	77.1	6	5.9
Singapore	5	83.1	10	2.1
Australia	2	82.8	6	3
The United Kingdom	16	81.2	9	3.5
The USA	10	79.3	14.2	5.6
Canada	10	82.2	7	4.3

Arguably, Sri Lankan health system should rank with the VHHD countries and comparison should only make with those countries to improve the health care system in Sri Lanka.

2.7 Selection of countries to compare

There were 51 countries in the category of VHHD in human development report 2016. So, it was decided to select countries from VHHD list to provide an evidence base for revalidation system for Sri Lankan set up. Due to feasibility and constraint of the resources, I have included only six countries in narrative literature survey. The countries were selected based on the health system similarities, and collaboration with Sri Lankan health system. The Sri Lankan Post Graduate Institute of Medicine required all trainees in post graduate training to have a foreign training of 1 -3 years in another country and explained in chapter 1.8. The countries most frequently selected by postgraduate trainees were The United Kingdom, Australia, New Zealand, Singapore, Canada and The United States. All six countries were categorised as VHHD in the human development report.

I have searched in PubMed, EMBASE and Google scholar search engine to capture as much as published literature. The literature based on following key terms were obtained.

Key terms for search

- Continuing Medical Education
- Continuing Professional Development
- Medical Council Registration
- Medical revalidation
- Medical regulation
- Medical relicensing
- Medical Recertification
- The results were filtered using country name.

2.8 Narrative Literature Review by Country

This section shows the review results of revalidation based on the country. As explained earlier, more emphasis was placed on six countries mentioned above. Additionally, it is helpful to look in to the development of revalidation process of UK as it demonstrates

- Drivers for change on the way doctors' appraisal
- Social pressure and intergroup conflicts on revalidation process
- Change of power structure of GMC and other regulators
- Time take for revalidation process development when using traditional approach
- Organizational changes required for revalidation

2.8.1 UK Revalidation background

Revalidation is not a new topic. The introduction of revalidation was never a straightforward process in any country and many countries are in the course of developing formal and mandatory revalidation and discussed more detail in the literature review. However, it is worth noting the development of The UK's revalidation process as the UK is the only country with formal mandatory revalidation system in the world at present. In addition, the present health system in Sri Lanka has its root from British health system. The revalidation system in the UK did not appear overnight. It was a result of processes, discussion and series of the important policy document. In 1858, General Medical Council (GMC) was established by a parliament act and primary intention of GMC was to maintain a register of doctors. In addition, it mainly focused on investigating serious complaints against the doctors on the registry. At the early stage of GMC, medical professional had very negative perception towards the GMC and was forced to reconstitute in 1979 after losing trust among medical professional. However, the changes in 1979, has resulted in GMC being more protective for doctors.

One of the landmarks of the medical system in the UK was the establishment of national health services (NHS) in 1948. The NHS was established to provide comprehensive healthcare provision for England initially and late incorporated Scotland, Wales and Ireland. It has undergone major restructuring after 2012. However, NHS remains its primary intention of providing comprehensive and equal health care to the entire population (The Health Service in England, 2012). At present, it is one of the largest public organisation with over 1.2 million staff and expenditure of 125 billion pounds (Office for National Statistics, 2015).

In 1975, an inquiry board was appointed to look for the regulatory changes need for regulation of medical professional. The committee is widely known as Merrison Committee which published its report on 1975. The report of this inquiry suggested tests of competencies among medical professionals. However, it did not mention revalidation as such. It further, emphasise the importance of GMC to encourage participation in continual medical education. It further, suggested the mere participation in such activities should not guarantee continual medical registration. Many organizations including BMA accepted the recommendations of Merrison report.

There was much broader debate in 1997, triggered by the election manifesto of the Labour party, on NHS structure including clinical governance, clinical auditing, CPD and annual appraisal. There were three white papers namely The New NHS: modern dependable, designed to care and to put patients first published during December 1997 and January 1998 covering proposed NHS reforms for England, Scotland and Wales (House of Commons, 1998). The first real conversation on revalidation began in 1998 as the GMC accepted the Government proposals on clinical governance, clinical auditing, CPD and annual appraisal. However, this created a division between the GMC members. There were two clear groups one supporting concepts of revalidation and the other strongly opposing revalidation. In 1999, there was a GMC Council conference on revalidation, where it was decided that the proposed revalidation system be

linked to doctors' registration and their right to practice. In addition, it was decided to include all the doctors in the revalidation process (Townsend, Skinner and Collings, 1999). However, this was not welcomed by all the doctors. The British Medical Association (BMA), the main trade union representing doctors in the NHS, voted a no-confidence and requested the dissolution of GMC. The latter was strengthened by the criticisms of the Ritchie report (Archer *et al.*, 2016).

The year 2000 was a very significant year regarding revalidation as the GMC started developing formal documents and proposals for a new revalidation process. Two essential publications were "Principles of Revalidation" Consultation Paper and "Revalidating Doctors: Ensuring Standards, Securing the Future" . In 2001, the annual appraisal for specialist medical doctors was introduced by the GMC. The annual appraisal system was based on the conclusion of the consultation paper Supporting Doctors, Protecting Patients, which has highlighted the need of modernising the whole process of identifying and dealing with the poor performance of doctors (Chief Medical Officer, 1999). The Medical Act (Amendment) – 2002 has empowered GMC to implement revalidation process in 2002 (Chief Medical Officer, 2008).

There was much criticism from the public for GMC being too lazy on tackling the poor practice of doctors (Irvine, 2006). There was increasing tension about the composition of GMC as there was less public representation in the GMC. Most of the GMC affairs were controlled by professionals themselves. In addition, there were concerns how self-governance among professional can lead to a lapse in their practice and bring negative perception toward medical professionals. Friedson states that "the profession's privileged position is given by, and not seized from society, and it may be allowed to lapse or even be taken away" (Freidson, 2006). In addition, the self-regulation concentrated on individual conduct rather than complex issues that are part of modern clinical practice. Thus, self-regulation is not sufficient in modern settings (Davies, 2007).

In the year 2007, the secretary of the health has presented a white paper discussing a broad range of issues in health care. These included key principals needed to be adopted in statutory professional regulation. The white paper highlighted the transformational change of shifting from focusing on tracking the poor performance of medical professionals to sustaining, improving and assuring the professional standards (Secretary of State for Health, 2007). Following the Secretary white paper, the Chief Medical Officer in England was requested to consider the issue and make a recommendation on the issue. The chief medical officer has produced a comprehensive document on revalidation including process and tentative time frame of implementing in England (Chief Medical Officer, 2008). The first pilot study on revalidation was conducted in the year 2010 and report was prepared by the Revalidation Support Team and the Department of Health in the year 2011. It paves the way to final structure of the revalidation process (Department of Health and Revalidation Support Team, 2011). Figure 2-2: Fishbone Diagram Showing Key Events Leading to Revalidation in the UKFigure 2-2 summarises key events leading to revalidation in a sequential manner.

Figure 2-2: Fishbone Diagram Showing Key Events Leading to Revalidation in the UK

2.8.2 Revalidation in The United Kingdom

Medical registration in The United Kingdom is regulated by a single body, GMC, where they require all doctors to be revalidated every five years to practice medicine. This is a mandatory requirement since 2012(General Medical Council 2012). Failure of revalidation resulted in doctor losing the licence to practice medicine. GMC's key document good medical practice provides the basis for revalidation and assessed in 4 key domain areas namely

- Knowledge, skills and performance
- Safety and quality
- Communication, partnership and teamwork
- Maintaining trust (Snape and Elliott, 2014)

The GMC revalidation process accommodates the wide variation of clinical scenarios and the range of doctors' duty. For every revalidation cycle, the doctor is required to participate in five annual appraisals, demonstrate continual educational activities and other supporting information (GMC, 2013).

There are 6 types of supporting information;

- Continuing professional development
- Significant events in care provision
- Quality improvement activity such as research, audits
- Feedback from colleagues (all staff categories -not limited to medical doctors)
- Feedback from patients
- Review of complaints and compliments from others

The nature of the supporting information is different for different sub specilities and should reflect their professional role (GMC, 2012). Doctors are required to maintain a portfolio of supporting information. At least one MSF is required for one revalidation cycle. The GMC – UK has provided only a framework for revalidation. The framework can be used to develop a revalidation process considering the requirement of individual medical speciality. The majority of doctors working in the UK will have a designated body for their revalidation and appraisal. The designated body will provide individual doctors with guidance and arrange regular appraisals. In addition, the designated body will provide information on appraiser and responsible officers. The appraisal will be based on GMC- Good Medical Practice guidelines and other core medical values. At the end of the five years, the medical director of the organisation (responsible officer) will analyse appraisals, portfolio and other evidence provided by the doctor. The responsible officer will also use the information from the organisational clinical governance system to make revalidation decision. Then the responsible officer will make a recommendation on revalidation to GMC. Revalidation Committee of GMC will make the final decision on revalidation.

Different professional colleges have set up different guidelines for revalidation. However, all the guidelines have a basic structure. Revalidation generally consists of a defined number of CPD hours, a certain number of clinical case presentations, completing some clinical audits, collecting feedbacks from various groups and reflecting on serious incidences and complaints. Most of the colleges required at least 250 CPD points per revalidation cycle. In the UK, 1 CPD point equals 1 hour of CPD activity. Figure 2-3 is showing an example of revalidation requirement decided by a professional college.

Figure 2-3: Royal College of Psychiatrists' recommendation for revalidation

Royal College of Psychiatrists' recommendations for revalidation

Within a 5-year cycle the doctor should:

- ✓ undertake 250 hours of CPD
- ✓ engage in 10 case-based discussions
- ✓ demonstrate use of appropriate outcome measures
- ✓ obtain feedback from at least one patient and one colleague using a GMC-approved tool
- ✓ undertake two clinical audits and one records audit
- ✓ review and reflect on significant events and complaints

2.8.3 Maintenance of Proficiency in Canada

In Canada, the process of revalidation is known as Maintenance of Certification (MOC) or Maintenance of Proficiency(MAINPRO). MOC/ MAINPRO is a legal requirement in all The Canadian jurisdictions. However, unlike in the UK, the process of doctors maintaining the competence depends on the regulatory decisions of each provincial College of Physicians and Surgeons. These are independent of each other and heterogeneous. Three the Canadian provinces (Saskatchewan, Ontario and Quebec) have made MOC or alternative programme compulsory to maintain their license to practice. Alberta and Nova Scotia provinces require MSF from patients and peers about their performance for maintenance of certification. However, there are no national standards on minimum requirement at present for MOC (Levinson, 2008).

MOC programmes are conducted and regulated by Royal College of Physicians and Surgeons. The MOC Programme also runs five-year cycles and the cycle begins at a beginning of a new year. Each cycle requires

- 40 credits per year
- 400 credits per 5-year cycle

The Canadian system is a more self-regulated system and each doctor is required to report their CPD activities through an online portal. At the end of the 5-year Candidate can obtained completion of MOC certificate. There are three broad categories of CPD points. These are

- Accredited group learning activities, by speciality
- Accredited self-assessment activities, by speciality
- Accredited simulation activities

From 2014, the minimum percentage of points from each category was introduced and remains at 25%. Thus making the requirements of CPD activities more balanced per each cycle (Royal College of Physicians and Surgeons of Canada, 2015). MAINPRO is a similar CPD conducted by royal college of family physicians in Canada. MAINPRO is based on five-year cycle and required to maintain 250 credits with At least 125 of the 250 credits must be MAINPRO certified credits in any category of Group Learning, Self-Learning, Assessment. Other 125 credits could be from non-certified. Table 2-2 shows the summary of MAINPRO requirements.

Table 2-2: summary of MAINPRO credit requirements

	Certified Activities At least 125 credits	Non-Certified Activities
 Group Learning	Conferences, rounds, journal clubs, Advanced Life Support programmes, American Academy of Family Physicians (AAFP) prescribed credits	Non-industry events, AAFP elective activities, Other activities
 Self-Learning	Online programmes, linking learning exercises, CFPC Self Learning programme, Canadian Family Physician (CFP) Mainpro-plus articles	Journal reading, teaching, research curriculum development, committee preparation
 Assessment	Practice audits, quality assurance programmes, linking learning to assessments, provincial practice reviews, medical examiner for certification exams	Manuscript reviews, examiner for practice exams, family medicine curriculum review

One of the criticisms of the Canadian MOC programme is the self-regulation and lack of external quality control (Levinson, 2008). In Ontario, there is a peer assessment system implemented by the Quality Assurance Committee of the province. A physician who is under 70 years of age and who has been in active service for at least 5 years is randomly selected and required to undergo peer assessment. Each selected physician is excluded from peer assessment for the next 10 years. Physicians who are older than 70 years are required to undergo 5 yearly peer assessments. This is due to evidence suggesting that the quality of care by physician declines with ageing (Choudhry, Fletcher and Soumerai, 2005). All the participant also have the right to give feedback on their

assessment. The College of Physicians and Surgeons of Ontario had started a consulting process with the medical professionals, the public and other stakeholders about the implementation of a revalidation system for Ontario doctors (College of Physicians and Surgeons of Ontario, 2006).

2.8.4 Recertification in New Zealand

New Zealand has mandatory revalidation process for medical professionals. The revalidation process in New Zealand is known as recertification. However, like The UK revalidation purpose is same and stated as “The principal purpose of this Act is to protect the health and safety of members of the public by providing for mechanisms to ensure that health practitioners are competent and fit to practise their professions”. Since Health Practitioners Competence Assurance Act – 2003, all practising physicians are offered annual licence to practice medicine. Each physician is required to provide evidence on CPD activities to obtain this license. New Zealand not only has rigorous control over licensure but also for the scope of practice. The authorities must specify the scope of the practice and registered doctors are banned from practicing outside the scope authorised. Not complying with these can result in cancellation of the licensure. There are different mechanisms including recertification programmemes, competency reviews, competency programmemes, peer reviews, medical examinations, and protected quality assurance activities, to make sure practising doctors are competent and safe. In addition, the Health Practitioners Competence Assurance Act incorporates ways to notify doctors who are not competent and to suspend their practice until a proper inquiry is made. Authorities can decide on quality assurance activities to improve the competence of doctors. Doctors who are engaged in quality assurance activities, in turn, have an immunity from civil liability (Ministry of Health - New Zealand, 2017). New Zealand medical council is the responsible body for maintaining the registration of health practitioners and had issued a booklet on recertification of doctors. As per the medical council, there are five domains in CPD programme in New Zealand

- Medical care – this includes providing good clinical care, prescribing drugs, emergency management, record keeping in clinical work and cultural competence
- Communication – this includes good doctor-patient relationship, maintaining confidentiality and trust, providing accurate information to patients about their illness, the involvement of family in patient care, helping with personal beliefs, provide information on health education and research activities, avoiding discrimination, dealing with adverse outcomes etc.
- Collaboration and management – include working with colleagues and making decisions about access to various medical care options
- Scholarship – this includes teaching, training, appraising and assessing doctors, involve research, involve in performance improvement activities,
- Professionalism – this includes raising concerns about patient safety, report writing, giving evidence and signing documents, maintaining professional integrity and conflicts of interest

There are two pathways to obtain a current practising certificate on annual basis and two pathways are a vocational pathway and general scope pathway. Vocational scope pathway is designed for specialist and general practitioners who are practising medicine confined to one speciality or a sub-specialty. These vocational pathway recertification programmes are coordinated by royal colleges on each speciality such as Australian and New Zealand College of Anaesthesia, New Zealand National Committee and Royal Australian and New Zealand College of Radiologists. General scope pathway is designed for non-specialised grade medical doctors. Recertification required for annual practicing license for general scope doctors can be achieved by participating in defined recertification programmeme conducted by approved provider. There are different options for different practitioners depend on their practice settings. For example, someone in vocational training required to be supervised by a doctor registered as a specialist and supervisor must provide 3-monthly supervisory reports. New Zealand recertification programme is also CPD activity based and required 50 annual CPD hours and other related activities. CPD and recertification are directly linked by Medical Council -New Zealand. The National Council audit 15

percent of doctors every year to check whether doctors are complying with recertification requirements (Medical Council New Zealand, 2016).

2.8.5 Maintenance of Licensure/ Certification in the USA

The United States operates a significantly different medical licensing process. It is not only different but not uniform across the United States (Shaw *et al.*, 2009). The individual medical licensing authorities or state medical boards of the various authorities are responsible for granting a license to practice medicine and registering medical practitioners. To obtain the initial medical license, the doctor must pass an examination like The United States Medical Licensing Examination (USMLE). USMLE is conducted by two non-profit organisations namely the Federation of State Medical Boards (FSMB) and the National Board of Medical Examiners (NBME)(USMLE, 2017). Post-licensure assessment is known as Maintenance of Licensure(MOL) or Maintenance of Certification (MOC) in place in most states (Shaw *et al.*, 2009) (Chung, Clapham and LaLonde, 2011). American Board of Medical Specialities (ABMS) runs MOC framework programme for physician skills and knowledge. The ABMS framework encourages individual boards and organisation to develop their own MOC programmes and suggested to follow their framework. As stated in the ABMS myths and facts booklet "The new standards also encourage the Member Boards to work with their diplomats and to be aware of their complex and diverse practice environments, regulatory requirements, and learning needs as they design and implement their Programmes for MOC," (American Board of Medical Specialities, 2016).The ABMS MOC framework involves continuing measurement of six competencies as follows

- Medical Knowledge
- Practice-based Learning and Improvement
- Systems-based Practice
- Patient Care and Procedural Skills
- Interpersonal and Communication Skills
- Professionalism

ABMS board certification programme is a part of becoming a consultant and 80-85% of doctors in The United States achieve the board certification. However, MOC is a voluntary activity. There are criticisms about MOC programme being driven not directly to improved quality of care but on financial inducements (Kempen, 2014). Federation of State Medical Boards (FSMB) had attempted to address these concerns and have introduced uniform application and Federation Credentials Verification Services. However, the new MOC programme from FSMB is not fully operational at present and expected to be adopted by medical boards in coming years(Federation of State Medical Boards, 2010) (Federation of State Medical Boards., 2017).

2.8.6 Revalidation in Australian Doctors

The Medical Board of Australia is responsible for registering medical practitioners and medical students, develops standards for the medical profession, drafting codes and guidelines for the medical profession, investigates notifications and complaints about medical practitioners. In addition, it has the responsibility of assessing international medical graduates and approving accreditation courses. Australian Health Practitioner Regulation Agency (AHPRA) is supporting the Australian Medical Board matters on legislations governing the medical board (Medical Board of Australia, 2017). The Australian Medical Council (AMC) is an independent national organisation for medical training and education. It is responsible for conducting examination for assessing international medical graduates. It also examines and scrutinises various academic and training programmes in medicine (Australian Medical Council, 2017).

There is no current mandatory revalidation system in Australia. However, Australian doctors required to fulfil the Medical Board's compulsory registration standards, including CPD and recent clinical exposure. Standards for CPD were developed by the medical board of Australia and are in place since 2010. In addition, Australia doctors are subject to random compliance audits by the regulatory authorities. However, in 2012, Australian medical board in

collaboration with the University of Plymouth in The UK attempted to look for revalidation options for the Australian context. The project is known as Collaboration for Advancement of Medical Education Research and Assessment (CAMERA). The CAMERA project released its final report on 10/07/2015. It identified CME/CPD, Annual Appraisal, MSF, blended learning and patient complaints assessment as effective approaches to revalidation (Archer *et al.*, 2015). They have recommended 3 models of revalidation and summarised in the table below (

Table 2-3).

Table 2-3: CAMERA project - recommended models for revalidation

Model	Key Feature
A	Fully online system Annual appraisal Includes MSF and CME activities Runs in every 5 years Based on guideline on good medical practice Cheap & cost effective Difficult in quality assurance
B	Like model A Not entirely online Bi-annual appraisal for at-risk doctors development of directed CME and facilitated online learning had overcome disadvantages of model A the disadvantage is that there is no direct evidence on this model
C	a dual approach to revalidation runs in five-year cycles more comprehensive and involves online portfolio self-directed and directed interactive CME, facilitated online learning, blended learning, annual appraisals, MSF and review of complaints overcome the disadvantages of model A and model B can be costly

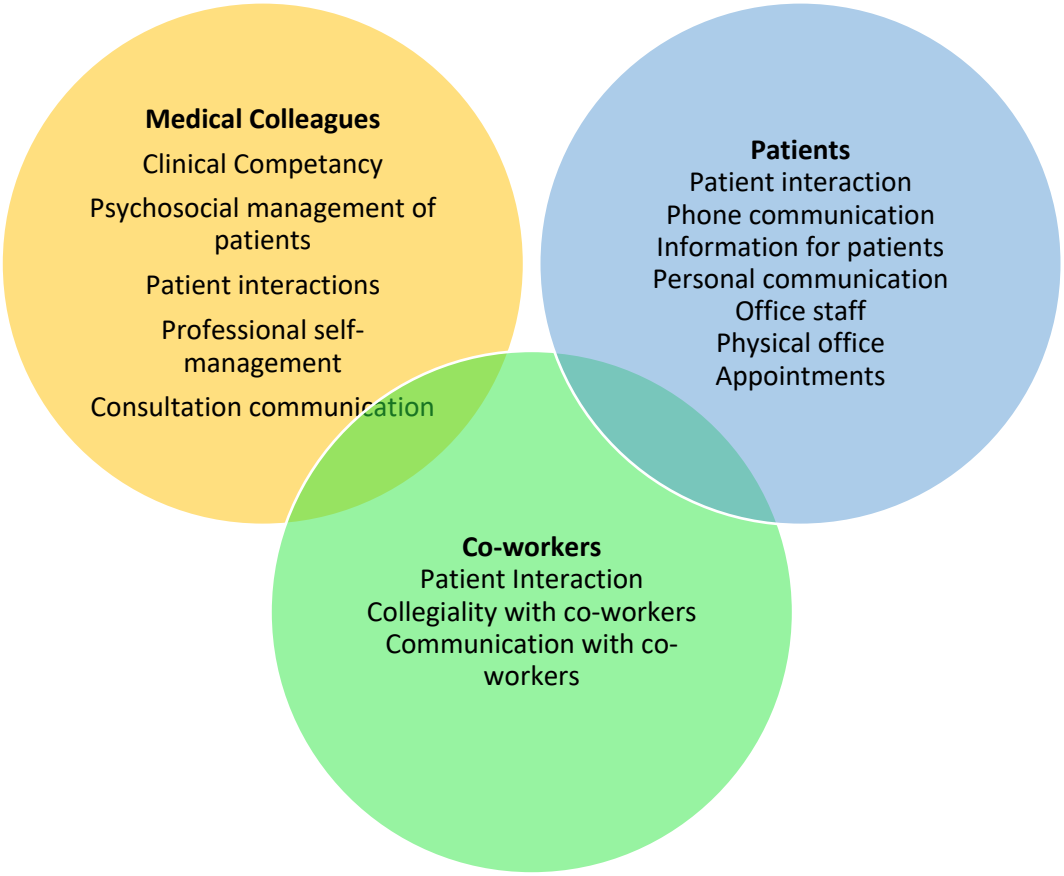
After the CAMERA project, medical board of Australia started a public consultation process on 16 August 2016 and concluded on 30 November 2016. After this public consultation, the Medical Board of Australia issued the interim report suggesting a two-part approach to revalidation of doctors in Australia. Two-part approach consists of

1. Continuing Professional Development, and

2. Early and proactive identification and taking actions on doctors at risk of deficient performance and of those who are already performing poorly.

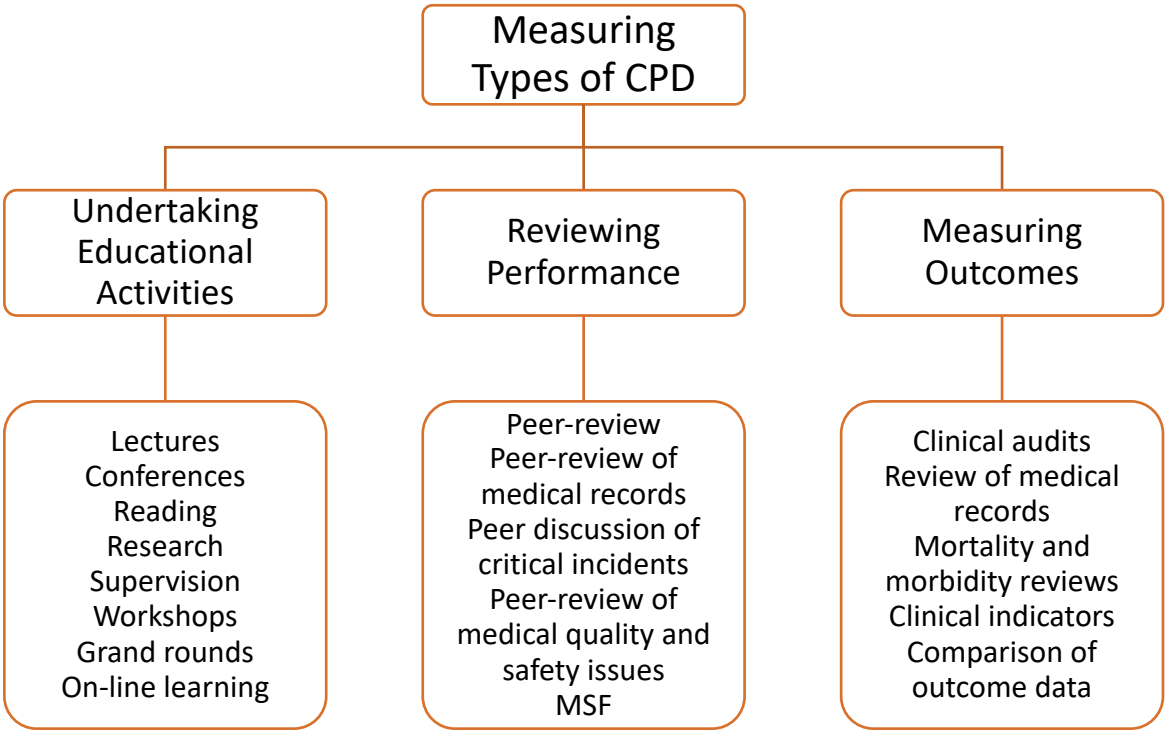
The interim report suggested MSF with an assessment of different competencies by different category of people and suggested components are illustrated in the image below (Figure 2-4).

Figure 2-4: Recommended components for MSF in Australia



According to the interim report, the Medical Board of Australia suggested three core areas of CPD activities be included in revalidation. These include educational activities, performance review and outcome measures. Figure 2-5 illustrates the types of CPD recommended for Australian revalidation. The board aims to start piloting the system in 2017 (Medical Board of Australia, 2016).

Figure 2-5 Recommended types of CPD recommended for Australian revalidation:



2.8.7 Revalidation in Singapore

In Singapore, maintaining doctors' license is a responsibility of The Singapore Medical Council (SMC), which is functioning under the MOH. Doctors who wanted to practice as a doctor required to obtain the practising licence from SMC. The practising licence has a validity period depending on the circumstances of individual doctor and needs to be renewed periodically. CME is mandatory for renewing the practising certificate. For Doctors holding a two-year practising

certificate are required to show 50 accredited CME points during the previous two years. 20% of CME activities should be on his speciality and family medicine. Doctors holding one-year practising certificate are required to show 25 accredited CME points during the previous year. Again, 20% of CME activities should be on the speciality and family medicine. CME activities are categorised by type of activity and there is a limit of point for an activity, thus, making doctors use a range of CME activities to obtain his required CME points (Singapore Medical Council, 2017).

2.8.8 Revalidation in Other Countries

German doctors are required to be registered with health authorities for practising medicine either as a full or temporary license. Full (Approbation) registration is valid for the entire country while temporary (Berufserlaubnis) registration is valid only for a federal state. Upon registration, it is compulsory to obtain registration with one of 17 federal chambers of the German Medical Association. The German Medical Association with its regional chambers operates well-regulated CME programme, which is mandatory and runs a five-year cycle. Each cycle required 250 CME points across 10 categories and every 45 minutes of CME activity is regarded as 1 CME point. In addition, specialised grade doctors required 70% of CME from his/her own speciality (German Medical Association, 2013). The German CME programme provides each doctor with a unique barcode which can be scanned at the accredited CME activities and the points automatically added to the user account thus minimising the difficulties of manual entering data (Merkur *et al.*, 2008).

In addition, the German system implements financial sanctions for non-engagement of CME/CPD activities. In Netherlands, The Dutch Ministry of Public Health and Registration Committee (Royal Dutch Medical Association) is responsible for registration/ re-registration of physicians. The re-registration requires a minimum of 16 hours per week of work in his field, 40 hours of CME/CPD a year plus an annual peer review. The Netherlands use five-year

cycle for reregistration. In Belgium, involvement in CME/CPD programmemes remains voluntary. There is, therefore, no system currently in place on revalidation (Accreditation Council of Oncology in Europe, 2008). However, an important feature of Belgian system is that financial incentives are linked to participation in CME activities, which could be one reason for high participation on CME activities despite it being a voluntary (Peck *et al.*, 2000).

In summary, most countries prefer revalidation in 5-years cycles. The most frequently used method for revalidation is CPD/CME activities. In addition, peer-review, MSF, complaints review were frequently used in revalidation. Use of technology in revalidation can reduce the burden on physician and German system appeared to be the most effective in technological point. Financial incentives can be used to boost engagement on revalidation.

Table 2-4: Summary of Medical Regulations as consolidated from multiple sources

	Medical Regulation on Registration	**Revalidation or Similar activity**
Australia	Yes	Yes – since 2010
The United States	Yes	Yes - in majority of states
New Zealand	Yes	Yes – annual
Canada	Yes	Yes
Singapore	Yes	Yes
The United Kingdom	Yes	Yes – Since 2012

CME/CPD appears to be the utilised method of medical regulation operating at varying degrees of intensity and duration. Most of, much of countries engage in peer review and/or practice review with all countries recognising eLearning/distance learning. Some countries outline a minimum requirement for physical consultations/practice hours as part of their revalidation requirements. Few countries make a conscious effort to review patient complaints systematically. Only one country reviewed in the case study development offers

a financial incentive for CME/CPD participation is Belgium with high participation rate.

2.9 Exploring effectiveness of different options

As discussed in the previous section, following activities are commonly used for revalidation purpose around the globe.

- CPD/CME
- Clinical Audit & Feedback
- Peer Review and MSF
- Appraisal
- Review of Complaints

In this section, the literature on effectiveness, a method of delivery and other aspect are discussed.

2.9.1 Formal CPD/CME

Almost all the countries are using CPD/CME activities in the process of revalidation. There are many research evidences on the effectiveness of CPD/CME on patient outcomes. Many researchers looked at the effect on CME/CPD activities on following attributes

- medical knowledge
- physicians' attitudes and communication
- surgical and non-technical skills
- practice behaviour
- clinical/ patient care outcomes
- number of complaints

Two Cochrane reviews have revealed that CME in the form of passive reading or listening to a lecture has little or no impact on learning outcomes. They further reported that use of interactive means can improve the clinical outcomes and suggested the use of case-based learning, clinical simulations, practice and feedback to improve the effectiveness of CME activities. The improvement mainly influences doctors' knowledge, skill and clinical practice behaviours. However, there is no convincing evidence directly improved clinical outcomes due to CPD/CME (Peck *et al.*, 2000) (Bluestone *et al.*, 2013). Many studies have suggested an alteration in traditional CME delivery method to improve the outcomes of CME. Repetitive interventions were shown to be more effective than single intervention on changing clinical outcomes. It also suggested that CME setting similar to real-life practice setting was also helpful in improving clinical outcomes (Bluestone *et al.*, 2013). In one of the meta-analysis, it was found that commonly used CME methods such as conferences/ lectures had no direct effect on improving professional practice. It further reported that CME has a moderate effect on physicians' knowledge, moderate to little effect on practice and little effect on clinical outcomes (Mansouri and Lockyer, 2007). CME's effectiveness in improving patient outcome linked to using multiple methods, repetitive participation and focused delivery. In addition, regular and long-term involvement with CME was found more effective than infrequent participation on improved patient outcomes (Cervero and Gaines, 2014). Research evidence shows participation in accredited CME/CPD can lead to significant reduction of complaints against participants. In a case-control study among 2792 physicians has shown that participation in CPD activities had significantly reduced the number of complaints compared to those who did not participate (odds ratio 0.604; $p = 0.028$). It further suggested that participation in CPD/CME can improve the quality of care provided to patients (Wenghofer *et al.*, 2015). Despite the arguments of the effectiveness of CME/CPD, a clear majority of research evidence proves CME/CPD as an effective tool for medical revalidation (Peck *et al.*, 2000) (Bluestone *et al.*, 2013) (Mansouri and Lockyer, 2007) (Cervero and Gaines, 2014). (Wenghofer *et al.*, 2015).

The delivery method of CPD/CME activity has shown to be the effect on outcomes. Interactive CPD/CME has shown to be more effective than non-interactive activities and identified as a critical success factor of CPD/CME programme (Bluestone *et al.*, 2013). Case-based teaching and active feedback have more effect compared passive methods (r = 0.33 in active methods to r = 0.20 passive methods (Mansouri and Lockyer, 2007). However, evidence suggested that CPD/CME is more productive if it is conducted in small groups belongs to same discipline rather than involving doctors from multiple disciplines. It was found to have a negative correlation between effect and involvement of multiple disciplines (r = −0.18) and the number of participants (r = −0.13) (Mansouri and Lockyer, 2007). In addition, need for shifting from input-oriented CPD activities to outcome-oriented CPD was highlighted and each CPD activity should bear following characteristics to be more effective

- Reflecting on individuals' clinical practice to identify his/her own educational needs
- Participate in appropriate CPD activities to meet the identified needs
- Application at clinical practice
- Measuring the impact of CPD on clinical outcomes

In addition, the clinician should take the ownership of his own CPD requirements (Wallace and May, 2016).

Targeted CME/CPD on specific subjects seems to improve the clinical outcome. One of the studies conducted to assess the effect of CME on managing obstructive sleep apnoea found that physician who participated in targeted CME have been significantly more likely to recommend seeing a sleep specialist compared to non-participating clinicians (60.7%; t 1,348 = 9.1, p < 0.01, OR = 2.6). and recommending sleep study (t 1,363 = 11.46, p < 0.001, OR = 3.1) (Johnson *et al.*, 2015). In addition, repetitive CME/CPD activities are more likely to have a significant effect on physician knowledge and clinical outcomes compared to a single programme. The effect seems to be more when used different modalities of CME (Ahmed *et al.*, 2013) (Bluestone *et al.*, 2013) (Mazmanian, Davis and Galbraith, 2009). Thus, it was recommended to design

CME in a way that the participants exposed to different modalities of CME on multiple occasions to effect on clinical outcomes (Marinopoulos *et al.*, 2007). In addition, research evidence suggests that traditional CME material are less effective and interactive material are better in improving clinical outcomes (Marinopoulos *et al.*, 2007).

Online delivery of CPD/CME has been taken as the convenient way forward for many health professionals. Computer-based learning can be more effective than traditional lectures and provide a cost efficient way of delivering CME (Bluestone *et al.*, 2013). A meta-analysis reported that online learning is associated with favourable effects compared with no intervention. However, it reported that no significant benefit of online CME/CPD compared with traditional methods of CME/CPD (Cook *et al.*, 2008). Online CPD/CME provide benefits such as

- Accessibility
- Quick dissemination of information
- Reduced cost such as travelling expenses
- Adaptability of multiple learning styles
- Ability to use interactive methods
- Convenience & Ease of access
- Low cost (Saita and Dri, 2014)

Additionally, a recent research has concluded that there is an increased likelihood of participation and physician attending online CPD/CME 48% more likely to use learnt information on clinical decisions compared those who are not participating (Casebeer *et al.*, 2010). This could be one aspect to look for a country like Sri Lanka as cost could be a key factor in deciding adaptation of a revalidation programme. Designing of online CME/CPD activity is challenging and require attention to balance the technical characteristics and learners' priorities. Characteristics of CME/CPD that are perceived as very useful by doctors include assessment linkage, high content quality, ease of access and ease of use. The study further, provided useful criteria on developing online

CPD/CME programme(Wong, Greenhalgh and Pawson, 2010). In addition, research evidence also reported that CPD/CME in small groups belonging to the same sub-specialty was more effective than the involvement of large groups in multiple specialities (Mansouri and Lockyer, 2007). One of the Irish studies, it was confirmed among GP's participation in small group CME activities in a frequent manner had to affect their clinical practice in nearly 86.3% of participants. It was also reported that legal background of CPD/CME requirement also contributed to high participation in CME/CPD activities. This (Dowling, Finnegan and Collins, 2015). Targeted small group CME were more effective intervention and was proved in many types of research around the world (Cervero and Gaines, 2014) (Mansouri and Lockyer, 2007).

Many studies supported that identifying specific target groups for CME/CPD activities are required. Study evidence suggested that analysing failure/ complication rate in surgical units can be helpful in identifying target physicians for specific CME/CPD activities (Ahmed *et al.*, 2013). In studies conducted in the USA, Canada and few other countries have shown that decline in clinical performance with age. One meta-analysis had reported that decline in physicians' performance with time (Dowling, Finnegan and Collins, 2015). In this study, 63 studies were analysed and found to have 62 studies confirming the inverse relationship between year since first registration and clinical performance (Choudhry, Fletcher and Soumerai, 2005). This was further evidenced by results of the United States rectification results. It was found that higher failure rates among physicians more than three decades out of training in comparison to their more recently trained physicians (Buyske, 2009). Some state MOC programmes, where there is written exams, have high failure rate over 25% and some of the qualified physicians were unable to get certification after repeated attempts (Christman, 2012). Similarly, in Canada, doctors in independent practice and doctors who are above 70 years of age were more likely to perform poorly at MOC programmes (Buyske, 2009).

One of the earliest CME/CPD activity was self-learning and improvement of the knowledge and skill of the medical doctor. This was supported by the arguments that medical doctors are a competent and educated adult who is in best position to understand his/ her own academic requirements. However., many research studies have identified this concept as challenging and problematic area (Bluestone *et al.*, 2013). Self-assessment was found to be driven by the stable perception of the medical doctor and reluctant to change (Lockyer, Violato and Fidler, 2007). However, most CME/CPD activities are based on the assumption that medical doctors are able to identify their own needs, an assumption that was not supported by literature (Lockyer, Violato and Fidler, 2007) (Davis *et al.*, 2006). This is particularly important as research evidence suggest that over-confidence of medical doctors has been identified as a risk factor on patient safety (Colthart *et al.*, 2008). It was also evident that medical doctors have limited ability to self-assess and prone for incorrect assessment (Davis *et al.*, 2006). Many types of research have shown the need for external assessment process (Mazmanian, Davis and Galbraith, 2009) (Davis *et al.*, 2006).

2.9.2 Multi-Source Feedback (MSF)

MSF is currently in use in the UK as a part of GMC revalidation. MSF has shown to effect on physicians' performance in a number of domains including communication, clinical skill and competence. However, significance of effect was variable on different studies as tools used to assess the effect was different (Ferguson, Wakeling and Bowie, 2014). In another study, it was reported that MSF can improve the performance of physician and size of the effect can depend on many individual factors including the context of the feedback and the presence of facilitation. Most doctors perceived MSF has educational value and effects on practice behaviour. However, the effect on practice behaviour was variable. GP's perceived MSF has an effect on performance while junior doctors did not believe MSF's effect on performance. The credibility of feedback, support from the institution also appeared to have an effect on the perception of MSF outcome (Miller and Archer, 2010). In addition, organisational arrangement on MSF such

as how results are discussed and communicated found to have an effect on the acceptance of MSF. It was found that facilitated feedback with narrative comments can achieve a higher level of behaviour change (Ferguson, Wakeling and Bowie, 2014). Individual components of MSF can have a varying degree of effect on the performance. One of the recent studies found that perception on patient feedback on paediatric trainees was influenced by many factors including nature of feedback, compatibility of feedback, physicians' self-perception and some other patient related factors. Therefore, recommended caution using MSF outcome to overcome any possible negative effects on performance (Bogetz *et al.*, 2017). Another research also supported the need for caution on interpreting patient feedback when interpreting MSF results. More insight into each component and facilitated interpretation was found to be critical for maximum benefit (Murton, 2016). Self-reflection on feedback is an important aspect determining the outcome of MSF. Facilitated feedback with the help on the handling of negative comments and help on reflecting on them have shown to significantly impact the level of change accomplished (Mann, Gordon and MacLeod, 2009). There is more robust evidence that MSF effectiveness can be enhanced by the way feedback is presented and recommended to present results through credible, knowledgeable, and familiar source (Ferguson, Wakeling and Bowie, 2014). In addition, there are many factors influencing MSF ratings by others including ethnicity, age, non-working relationships. In a study conducted in The UK to assess the effect of MSF found that patients from the white ethnic background are more likely to provide a favourable assessment and non-medical colleague who has more contact with the physician in question are also more likely to provide favourable feedback. The study suggested to MSF should not be used in isolation to inform decisions about a doctor's fitness to practice medicine.(Wright *et al.*, 2012). GMC - UK have prepared different questionnaires to be used in MSF and recommended for an integrated approach to interpreting MSF outcome and specifically recommended not to utilise patient and colleague feedback as a standalone measure of physician's performance (GMC, 2012). In another study on MSF among radiation oncologist have reported that MSF ratings were better than the self-assessment by physicians. The self-assessment scores were ranged from 3.2 to 3.7 while mean feedback scores were between 4.4 to 4.9. The difference was statistically significant. It

further reported that participants found that the MSF was a positive experience and some even planned for changes to their practice based on the MSF outcome (Vinod and Lonergan, 2013).

Despite the caution around interpretation, many research evidences supports MSF as an instrument high reliability, validity and feasibility. A systematic literature review conducted in surgical settings reported that MSF is a proficient way of assessing non-medical competencies such as communication, interpersonal skills, professionalism, humanism and teamwork (Al Khalifa *et al.*, 2013) (Donnon *et al.*, 2014). Despite conflicting evidence, MSF was perceived as a helpful tool by physicians. In one study conducted in The United States, 87 percent of physicians (95%, Confidence Interval 75%-94%) agreed that MSF reviewers provided accurate feedback on them and 80% of supervisors agreed the feedback accurately reflected the performance of physician. Seventy percent of assessors (95% CI, 69%-74%) agreed the MSF process was valuable, with 82% (95% CI, 79%-84%) willing to participate in future MSF (Nurudeen *et al.*, 2015).

Questions posed on MSF is how many feedbacks it required to get reliable information on physicians' performance and who should involve providing feedback. Research evidence suggests an at least 8 medical colleagues' feedbacks and, 8 non-medical colleagues feedback with minimum 25 service user feedback required to get satisfactory reliability (coefficients of $\alpha \geq 0.90$) and generalizability (coefficients of $\alpha \geq 0.80$) (Donnon *et al.*, 2014). In another study, 15 feedbacks from colleagues and 34 from service users were identified as a requirement to achieve satisfactory reliability of MSF (Wright *et al.*, 2012). One of the studies found out that patient involvement is very important in designing effective, safe, and approachable health system (Coulter and Ellins, 2007).

2.9.3 Audit and feedback

There is strong research evidence suggesting clinical audit and feedback as an effective means of improving patient care outcomes and physician performance(Bluestone *et al.*, 2013) (Bloom, 2005). In a Cochrane review conducted in 2012, 82 comparisons from 49 carefully selected studies found that audit and feedback usually lead to improvements in professional practice. However, the effect rests on baseline performance and way of the feedback provision. Multivariable meta-regression showed that feedback may be more effective on low baseline performance, provided by a supervisor or colleague, repeated feedbacks in both verbal and written formats and included with an action plan (Ivers *et al.*, 2012). There were many barriers to implementing audit and feedback programme on many instances. Research evidence suggests that may factor including

- resource limitation (money, man and material),
- poor management system and audit support infrastructure,
- excessive workload,
- unavailability of evidence-based guidelines and
- bureaucratic organisational structure

as barriers in clinical audit. On the other hand, overcoming barriers combined with intensive feedback mechanisms are identified promoting factors for effective clinical audit and feedback programmes (Vahidi *et al.*, 2013).

2.9.4 Appraisal

An appraisal is a tool that is used by GMC revalidation and similar programmes around the world (GMC, 2012). One of the studies conducted in a major hospital in The UK reported that good human resource management practices at NHS can reduce the patient mortality and appraisal was identified as such good HRM practice. IT was reported that " … a hospital which appraises around 20 per cent

more staff, and trains around 20 per cent more appraisers, is likely to have 1,090 fewer deaths per 100,000 admissions" ((West *et al.*, 2006). In a study conducted by Institute of employment, studies found that following HRM practices influence patient mortality

- availability of an appraisal process
- proper training arrangement
- voting status of HRM director in the hospital board
- percentage of staff working within a team

However, the strongest effect was from having an appraisal process and the appraisal was identified as the strongest factor encouraging physician development and improving performance (Miller *et al.*, 2007). One of the criticisms against appraisal was the lack of consistency and lack of robustness. However, development of more structured and systematic appraisal systems has addressed that issue. The quality of appraisal depends on many factors including

- commitment of the appraiser
- skilful of the appraiser - particularly interpersonal skills and the ability to take a systematic approach.
- learning opportunities attached to the process

The paper highlighted the characteristics of the good appraiser and identify the importance of the role of the appraiser in the success of appraisal process (Griffin *et al.*, 2015). In addition, the appraisal has shown to be positively affected on career development, increase motivation, work commitment and job satisfaction (Pearson, Reilly and Robinson, 2004).

2.9.5 Review of Complaints

Patient complaints and patient satisfaction are inter-related and lack of satisfaction often lead to complaints. However, patient satisfaction is complex and depend on many factors (Boudreaux, Cruz and Baumann, 2006). Many

researchers have reported that patient complaints can be used as a predictor of patient safety failures (Kroening *et al.*, 2015). Therefore, the successful healthcare organisation uses patient complaints as an aid to improve the patient safety as patient complaints may be the first sign of unsafe systems and unsafe physician. Therefore, it is recommended to record, analyse systematically to identify unsafe systems and unsafe physician and such system invariably lead to improve safety and reduce litigation risk. Spontaneous patient complaints offer a way identifying high-risk physicians. It was reported that physicians respond constructively if those complaints are handled through a physician-driven feedback process (Pichert, Hickson and Moore, 2008). However, a study conducted in Taiwan reported that many organisation did not use the opportunity of patient complaints about quality improvement activities (Hsieh, Thomas and Rotem, 2005). Research evidence has shown that most of the complaints coming from very few physicians and number of complaints against a physician well correlated with risk of malpractice in the future (Pichert, Hickson and Moore, 2008). From the financial point, the evidence has shown that small minority of high-risk practitioners (8%) accounted for 50% of complaints related expenses while the majority of low-risk practitioners (49%) accounted only for four percent of expenses (Moore *et al.*, 2006). These findings were replicated in Australian settings as well. One research analysed nearly 20000 complaints against physicians in in Australia and found that 3% of physicians were responsible for 49% of patient complaints and having one complaint is predictive of future complaints. Therefore, this approach is suggested to identify doctors who are a risk to patient safety and employing targeted intervention on them to improve patient safety and satisfaction (Bismark *et al.*, 2013). Some researchers have developed a scoring method for identifying doctors at risk of the recurrent complaint and suggested to use such system in real life scenario to identify risky doctors and doctors who are likely to be a risk to patients (Spittal, Bismark and Studdert, 2015). An evaluation of patient complaints is a powerful tool for recognising physicians who are under performing and risk for the public.

2.10 Studies on CPD and CME in Sri Lanka

There are a limited number of studies conducted in Sri Lanka on continuous professional development programmes. Most studies have identified the need for accredited and formal revalidation system for Sri Lankan doctors. A study conducted in Sri Lanka has suggested establishing rewarding systems for the participation in CPD activities as sustaining such programme. Further, implementation of CME policy in the medical profession is also recommended (Rathnayake, 2007). A study conducted by a dental professional in Sri Lanka has revealed the need of CPD programme and Sri Lanka dental association has taken initiatives to develop CPD programme for dental doctors (Dissanayake, 2008). A study conducted in western, central and northern provinces of Sri Lanka has examined a different type of factors affecting professional development of the medical profession and the ways of their behaviour in relation to development opportunities in government hospitals. This cross-sectional perspective study has found that introduction of information technology, active feedback system on performances and sustainable rewarding system incorporated into CPD programme can lead to successful CPD programme (Udugama, 2008).

Another study in Sri Lanka has examined the feasibility of introducing a web based online continuous professional development programme. Over the last two decades, there has been an increasing interest in the use of information technology to facilitate a fair distribution of CPD. It has identified web-based CPD programmes will fulfil the educational requirements of health professionals in the peripheral parts of Sri Lanka who have difficulty in attending formal education sessions due to their geographical isolation. Meeting the educational needs of professionals already in practice remains a challenge and the web based online CPD can play a key role in providing the varying demand (Kulatunga, et al., 2012). However, internet penetration and the demographic factors of doctors will play a significant role in success and sustainability of such online programme. Sri Lanka internet penetration has grown over the last few years and reported as 29.3. this is compared to just 10% in 2010 (Internet Live Stats, 2016). However,

data on internet use among medical doctors is lacking. Use of online programmes will certainly play a significant role in future CPD and revalidation programme as it can be convenient, cost effective and accessible throughout the country.

Further, lack of career development and continuing education is one reason for the migration of medical professionals from Sri Lanka. A study carried out has revealed out of 1,915 postgraduate trainees who left Sri Lanka for training, 215 (11%) have not returned or have left the country without completing the government specified the bond period. Lack of career development and continuing education was a major reason. The study also identified government incentive programmes such as duty concession permits, eligibility for private practice and awarding national schooling on priority basis prevents specialists from migration (De Silva *et al.*, 2013). However, recent changes in the social environment could have a significant impact on this migration levels in the country. For example, the government has reduced the frequency of concessionary permits and limited the concessionary permit number to two. There were trade union actions by specialist medical officers and the Government Medical Officers Association (GMOA) regarding schooling issues for their children. Also, an increase in a number of medical specialist in the country has resulted in high competition for highly attractive private practice for a medical specialists. Thus, incentive based CPD and revalidation programme could influence migration.

Many professional organisations in Sri Lanka have started professional development programmes for their members to uplift the standard of their profession. The Institute of Certified Management Accountants has published guideline on CPD programme for their members (Institute of Certified Management Accountants, 2009). The Institute of Engineers Sri Lanka also formed a CPD committee and introduced an online CPD programme for their members. Even though the programme is relatively new development, it appeared that acceptance of the programme among its members remains high

and was financially self-sufficient without government involvement. The Institution of Engineers Sri Lanka had identified issuing an accredited certificate had contributed to acceptance and increased participation for their CPD programmes (Institute of Engineers Sri Lanka, 2015). Since financial insufficiency had contributed to CPD programmes for doctors in the past, there may be lessons to learn from Institution of Engineers Sri Lanka and collaboration with other professional colleges can be helpful in the development of a sustainable programme for doctors.

2.11 Summary of Narrative Literature Review

Revalidation is considered as an important aspect of improving quality and safety of patient care. Despite it has been there for many decades, there is no consistent and uniform mechanism adopted in the world. Different countries use a different approach to revalidation. However, increasing number of societies are adopting a mechanism for assessing health care professionals' competency. CPD/CME is the most popular and common mean of assuring the standard of medical professionals. In addition, MSF, appraisals, clinical audits and patient complaints are used in the revalidation process. As discussed throughout the chapter, it was evident that using more than one means and more than one source is more effective than using a single mode of assessment to revalidate medical doctors.

Figure 2-6 shows the effect of different tools on clinical performance and Figure 2-7 shows effects on patient care outcomes. Values in the figure represent the number of systematic reviews (Wallace and May, 2016).

Figure 2-6: Effect of Different Tools on Clinical Performance (Wallace and May, 2016)

CPD activity	High	Moderate	Low	None
Didactic programmes	0	3	7	10
Interactive	5	6	2	0
Audit/feedback	6	11	4	2
Academic outreach	6	8	1	0
Opinion leaders	0	3	4	2
Reminders	9	9	5	0
Clinical practice guidelines	0	3	2	0
Information only	0	2	3	8

Figure 2-7: Effect of different tools on Patient Care Outcome (Wallace and May, 2016)

CPD activity	High	Moderate	Low	None
Didactic programmes	0	0	0	14
Interactive	0	3	1	3
Audit/feedback	0	5	3	2
Academic outreach	1	4	1	0
Opinion leaders	1	0	0	0
Reminders	2	4	2	2
Clinical practice guidelines	0	1	0	0
Information only	0	0	1	2

Key points to be highlighted are

- The emerging evidence demonstrates that:
- All the countries studied use CME/CPD as a part of continuing medical regulation.

- There are multiple terms use for the process of revalidation such as recertification or relicensing
- CPD point systems are in operation as a part of revalidation
- Some countries provide financial incentives to encourage CPD/CME participation while others have introduced penalties for not participation
- Most countries have made CME/CPD mandatory while other use voluntary system – however, the trend is to make CPD.CME requirement mandatory
- Most popular revalidation frequency appeared to be five years

Thus, developing a revalidation process with more than one component/ tool is more effective than using only an individual activity. In addition, the chapter discussed the important characteristics of each type for maximum effectiveness. I have used the research evidence shown in this chapter and practical knowledge to develop a prototype of revalidation for Sri Lanka as shown in the next chapter.

2.12 Using Prototype to develop a revalidation process for Sri Lanka

Prototype can be defined in many ways. The definition largely depends on the context. Merriam-Webster defined prototype as “an original model on which something is patterned” (Merriam-Webster, 2017). The Prototyping Model is defined in software development as “a systems development method in which a prototype (an early approximation of a final system or product) is built, tested, and then reworked as necessary until an acceptable prototype is finally achieved from which the complete system or product can now be developed” (Carey, 1990). In psychology prototype is defined as “something original — an original form of something that serves as a standard” (Psychologia, 2017). There is no accepted definition on prototyping human resource tool development or in organizational studies. However, in my opinion many organizational tools have

used some sort of existing tool as a base for new tool development. For example, apparently CAMERA project had used GMC revalidation tools and other available tools to explore revalidation option for Australia (Archer *et al.*, 2015). There are many benefits of prototyping. It is outside the scope of this study to discuss more details on prototyping. Some of the important benefits of prototyping is summarized in Table 2-5 (IOTAP, 2017) (Huston, Willis and D'Ouville, 1988).

Table 2-5: Benefits of Prototyping

Better quality tool development	Revalidation of medical profession is a very complex. It is very difficult to predict and understand all the aspects of revalidation requirements by one person or a team of developers. Also, end use experience also may be significantly different. Prototyping enables to use existing product which are developed and used for some time. Thus, some of the aspects are already quality assured.
Early Identification of problems	A working revalidation tool is available from the early development process. The user can identify possible improvements which can be made before the system is fully designed and implemented.
End user / Stakeholder involvement	Once prototype is tested, it is possible to engage most, if not all, stakeholder in the development process
Fulfil user requirements	A tool which has been through prototyping will generally have an improved design quality and will be far closer to what the user needs.
Cost savings	It is far less expensive to rectify problems with the system in the early stages of development than towards the end of the project.
Training	The prototype can eventually be used to help train staff while the real system is still being fully developed

As for any method, prototyping has some disadvantages and some key disadvantages are discussed below (IOTAP, 2017).

- Insufficient analysis – focus on one prototype can lead to insufficient analysis of other methodologies available.
- User confusion of prototype as the final tool – initial prototype of the revalidation tool can have significant problems and that may lead to negative perception on the process
- Developer misunderstanding of user objectives – objectives of users may be significantly different on original context and new context. For example, objective of revalidation in UK may not be the same as objective of revalidation in another country.
- Developer attachment to prototype researchers can become attached to prototypes and may ignore genuine user recommendation based on their personal thinking.
- Excessive development time of the prototype – two key advantages of prototyping is rapid development and cost reduction.
- Expense of implementing prototyping – Some people argue that prototype need to be implemented to identify shortcomings. Implementing prototype can be very costly process in certain settings

There can be many schools of thoughts on development of revalidation process for Sri Lanka. Also, rather than using prototyping, many methods including designing from scratch is also a possibility. Next chapter on methodology will look these considerations in greater detail.

2.13 Management structure of Ministry of Health – Sri Lanka

Sri Lankan health sector is still functioning more longitudinal management structure and still has a hierarchal component within it. It is worth describing how medical officers are manged in the ministry as revalidation directly effect on management of medical doctors in the ministry. Director General of Health

Services (DGHS) is the technical head of the department and the minister, the deputy minister, the secretary health are above the hierarchy and will convey political and policy decisions on healthcare. DGHS has 15 deputy director generals' (DDG) under him. Of the DDG's, there are 2 DDG's managing medical doctors with DDG -MS1 and DDG -MS2 respectively managing consultants and grade medical doctors.

Figure 2-8 shows the modified organisation structure in the MOH(Ministry of Health - Sri Lanka, 2015). MOH has many Directorate and a full description is out of the scope of this report. In addition to this structure, at the provincial level and district level further longitudinal management structure is functioning, making health organisation more bureaucratic. The management structure at provincial and district level is shown below in

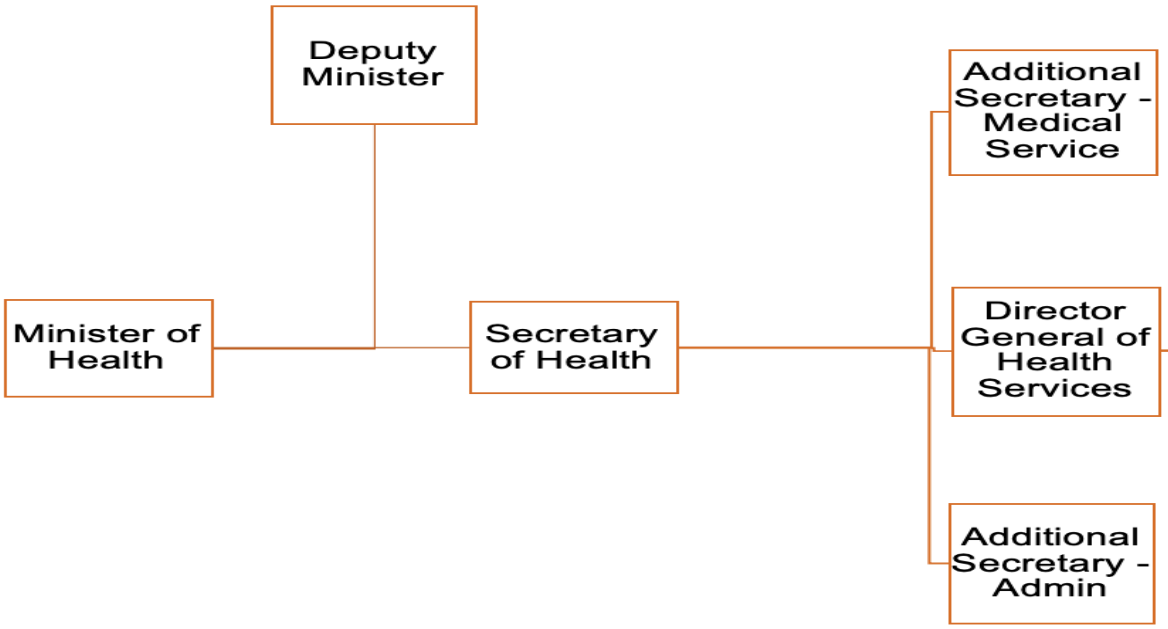


Figure 2-9 and Figure 2-10(Provincial Health Department - Central Province, 2011).

It is expected that revalidation process for doctors will requires significant change of the organizational structure and power structure within the organization. These are discussed in detail on the chapter on methodology.

Figure 2-8: Organization of Health Services in Sri Lanka (Ministry of Health - Sri Lanka, 2015)

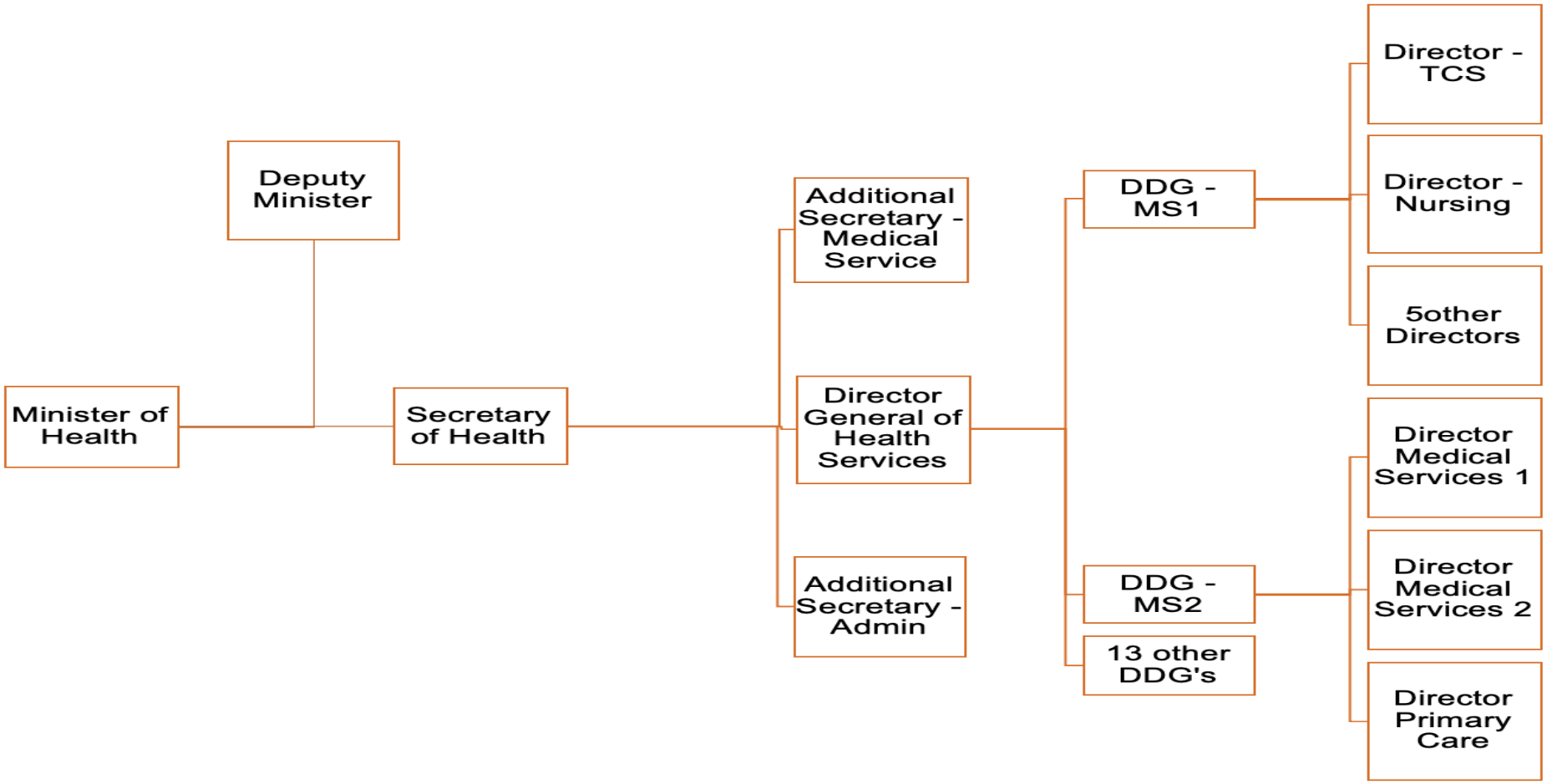


Figure 2-9 Organisation of Provincial Health Services (source: modified from Provincial Health Department - Central Province, 2011)

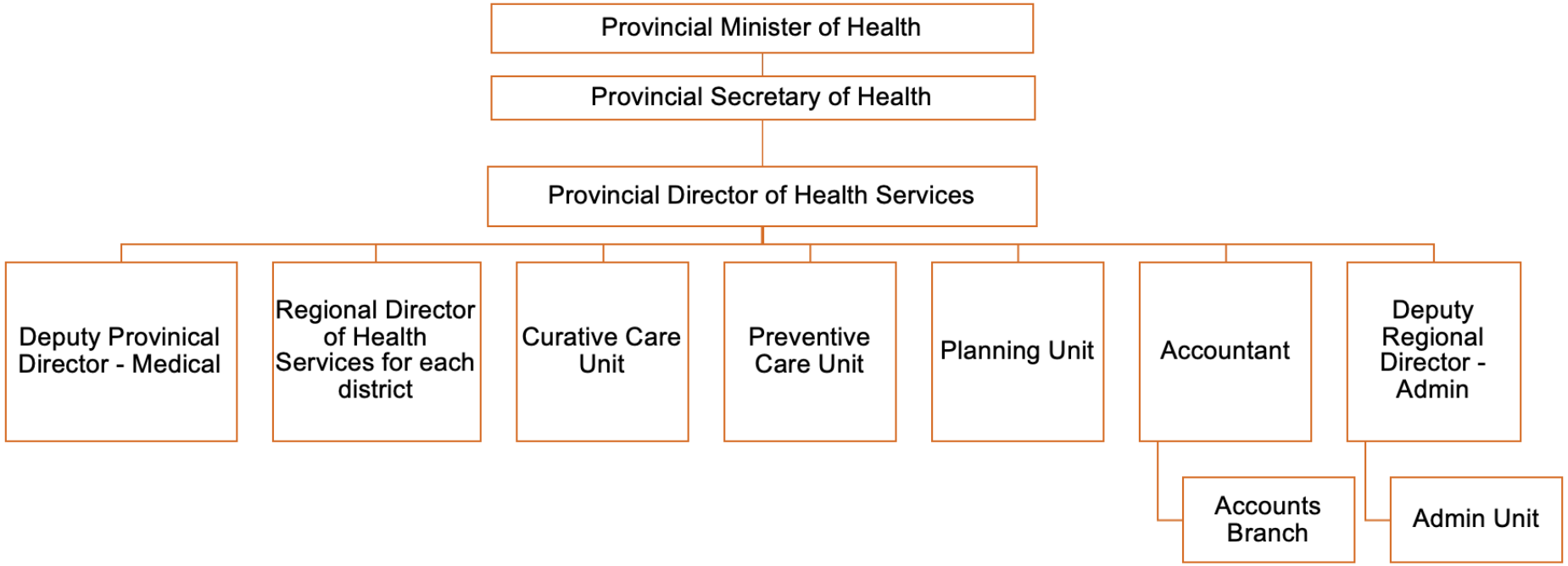
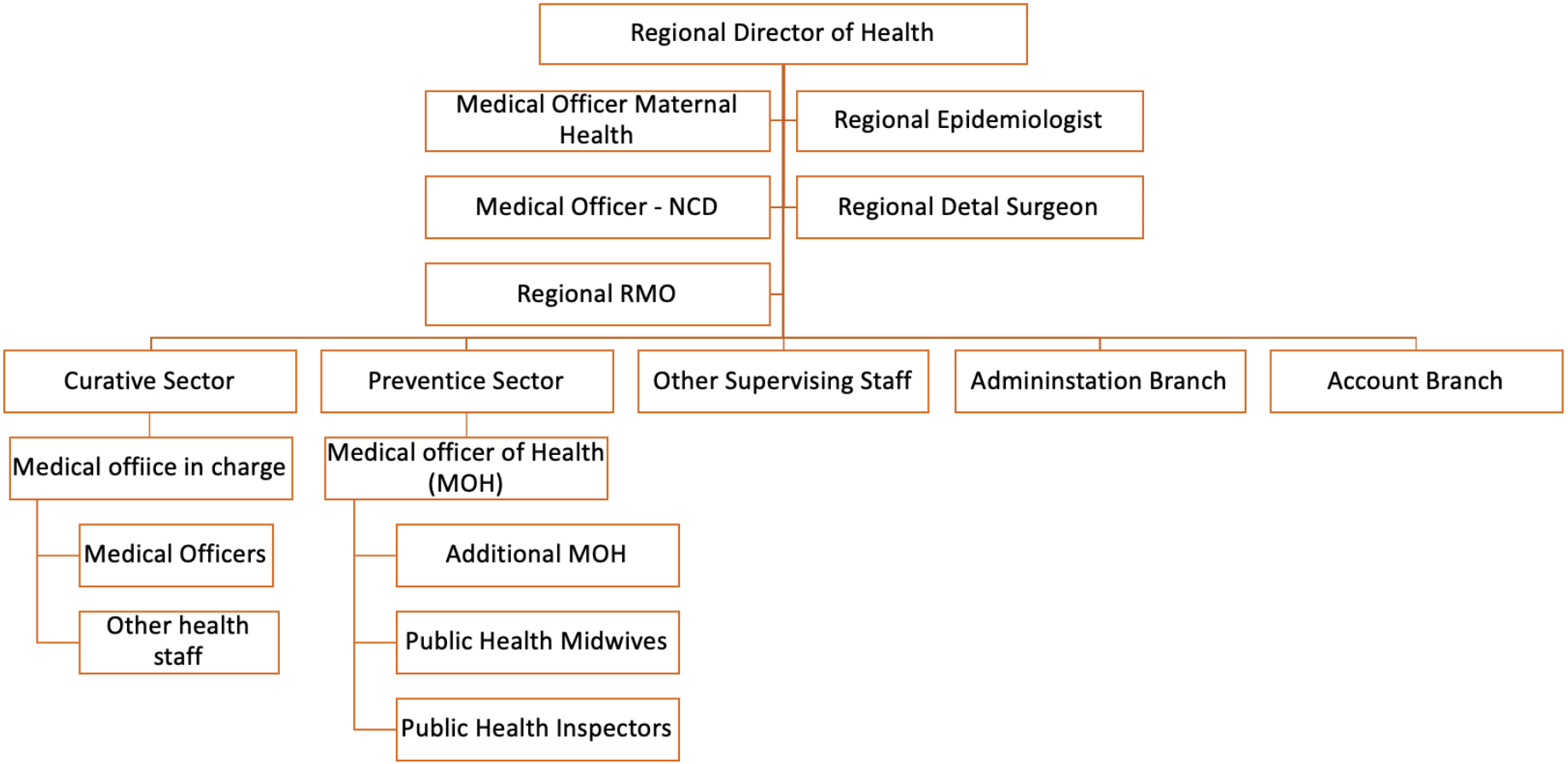


Figure 2-10: District Organizational Structure (Source: Modified from Provincial Health Department - Central Province, 2011)



3 Methodology

This chapter identifies the primary aim of this study and rationale for using proposed study methodology in this scenario. A literature review has suggested that there is a lack of evidence on many aspects of revalidation among Sri Lankan doctors. In addition, studies in other countries have shown the traditional process of developing a revalidation method takes at least few decades to develop. Traditional approach also involves very high cost. Therefore, traditional development model of such system will not be suitable for Sri Lanka and need an expedited process for Sri Lanka and many other countries in the world. Therefore, I took an alternative approach and designed a quicker approach to developing a revalidation process.

The research is carried out in logical steps and

- Narrative literature review on revalidation in countries with higher ranking in health compared to Sri Lanka (chapter 2)
- Identifying key elements of revalidation and developing a model of revalidation using the key principals and using knowledge and experience on Sri Lankan health system (chapter 2)
- Evaluation of proposed model using mixed method approach (chapter 4)

This chapter will also include

- Philosophical assumptions and alternative approach to the research
- Positioning the researcher within the research
- Advantages and disadvantages of being insider & steps taken to overcome disadvantages
- Social, and personal context of this research study
- Rationale for using mixed method study
- Rationale for using exploratory sequential design
- Contextual framework for the study

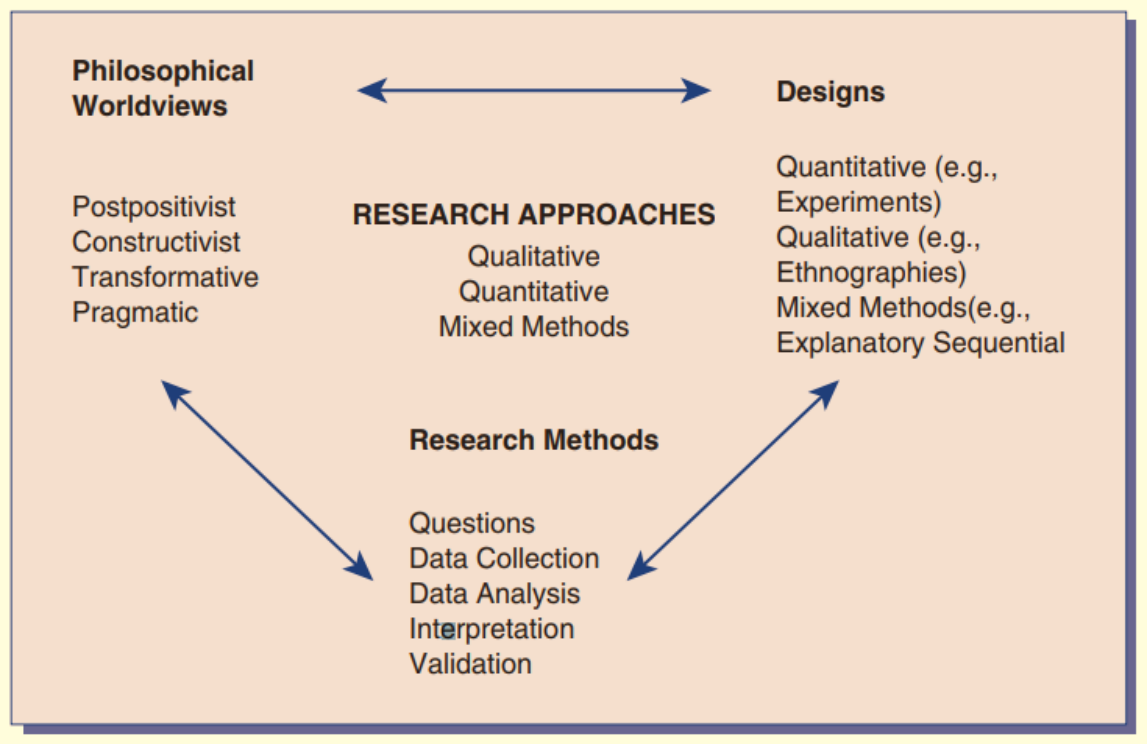
- Rationale for using Activity Theory
- Developing sketch of proposed revalidation tool

3.1 Philosophical assumptions and alternative approach to the research

Approach to research is a continuum rather than rigid and framed boxes (Ridenour and Newman, 1998). Even though people categorize research in to 3 main approaches (Qualitative, Quantitative, Mixed Methods), there is considerable overlapping. Research approach is generally determined by the philosophical worldview, research question. In many organizational studies, philosophical assumptions remain hidden. However, there are distinct characteristics of each approach. Qualitative research is an approach for exploring and understanding the meaning of problems faced by society or by the individuals. Generally, the qualitative researcher will take inductive approach. He will mostly focus on individual meaning, and the importance of rendering the complexity of the problem. Quantitative research is a way of testing the relationship among variables. Typically, quantitative researcher will deal with numbers and will use statistical tests. He will focus on deductive approach and will concentrate on generalizing findings while taken care to avoid bias. Mixed methods research (MMR) is an approach to inquiry involving both quantitative and qualitative data. The MMR is supported by the research design and underlying philosophical assumptions. It provides more complete understanding of the problem (Creswell, 2014).

Creswell (2014) suggested to be explicit on the philosophical worldview as it rationalize the use of research design and approach. The philosophical worldview, design and methods are interconnected, and their relationship is shown in Figure 3-1.

Figure 3-1: A Framework for Research—The Interconnection of Worldviews, Design, and Research Methods (Extracted from Creswell, 2014)



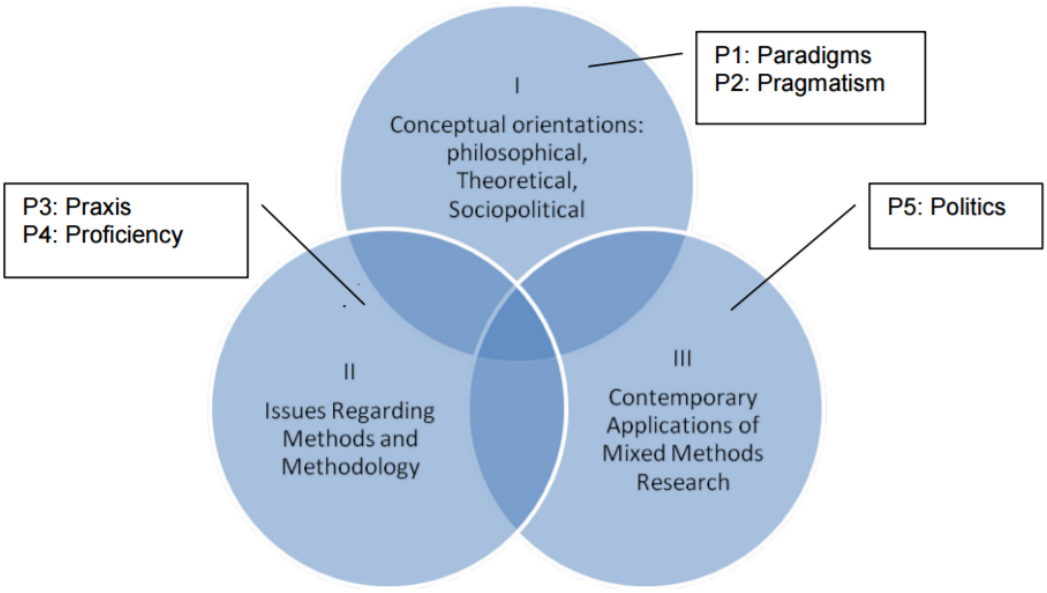
"Worldview" is the overall philosophical orientation about the world and the nature of research that a researcher brings to a study. The philosophical worldview will depend on basic assumptions and include

- Ontological assumptions - nature of reality
- Epistemological assumptions – nature of knowledge
- Axiological assumptions- objectivity and subjectivity
- Methodological assumptions - research strategies

In this study I have chosen pragmatic stance with mixed method design. The next section explained the reasons behind the selection and positioning of researcher using 5P framework. Alternative approaches are also discussed below in this chapter.

Organisation studies have involved researchers from many schools of thought including critical realism, positivism, social constructionism, action research, and ethnomethodology are some among. I have used 5P's framework explained on the Handbook of Mixed Methods in Social & Behavioural Research by Tashakkori and Teddlie on deciding on the epistemological stance. This includes three overlying zones namely conceptual orientations, methods and methodology and modern applications of MMR(Tashakkori and Teddlie, 2010).Figure 3-2 summarises 5P framework.

Figure 3-2: 5P approach for mixed method research



There had being much debates about paradigms and using different methods of study in each paradigm. "Purist" have argued the paradigms should not be mixed and certain methodological choices are limited to certain paradigms. "Situationist" have taken the much softer approach and argued that some mixing of methods acceptable depend on the situation. In contrast, pragmatics argued against a false dichotomy of qualitative and quantitative research paradigms. They advocate the use of both approaches to gain a more comprehensive understanding of the problem. The researcher belongs to the latter category and

used both approaches for the efficiency of the study. However, there is criticism on pragmatic stance including that the pragmatic stance can lead to unsatisfactory quality research. Thus, robust quality control criteria are employed in this study and discussed later in this chapter.

Buchanan & Bryman (2007) had remarked “The paradigm wars of the 1980s have thus turned to paradigm soup, and organisational research today reflects the paradigm diversity of the social sciences in general. It is not surprising that this epistemological eclecticism has involved the development of novel terminology; innovative research methods; non-traditional forms of evidence; and fresh approaches to conceptualization, analysis, and theory building.”

3.2 Alternative views to the research question

Different researchers belong to different paradigms. Each of these paradigms different from their ontological and epistemological stance. Additionally, choice of methods and design will depend on ontological and epistemological stance. Table below (Table 3-1) summarizes different stance of major paradigms.

Table 3-1: Possible paradigms and approaches to the research

Paradigm	Ontology	Epistemology	Methods
Positivist/ Postpositivist	There is an objective reality and we can understand it and it through the laws by which it is governed.	employs a scientific discourse derived from the epistemologies of positivism and realism	Experimental, Deduction
Interpretivist	World and knowledge created by social and contextual understanding	How do we come to understand a unique person's worldview	Qualitative methods (narrative, interviews, observations, ethnography, case study, phenomenology)
Critical	Reality exists and has been created by directed social bias	Understand oppressed view by uncovering the "contradictory conditions of action which are hidden or distorted by everyday understanding" and work to help change social conditions	Critical analysis, historic review, participate in programmes of action
Pragmatic	Reality is the practical effects of ideas	Any way of thinking/doing that leads to pragmatic solutions is useful.	Mixed Methods, design-based research, action research

Most studies conducted in scientific methodology belongs to the positivist or post-positivist paradigm. This study could have been done in differently using only a quantitative component of the study and concerning more about generalizability of the tool that is intended to develop. However, it would have resulted in low acceptance and low validity as detailed perception cannot be accommodate in such design. Interpretivist design on this question will lead to greater understanding of meanings of individual components of revalidation. However, complexity of the problem and difference in understanding could lead to confusion over outcomes and will not be helpful in implementing a revalidation tool. Transformative and critical perspectives can be very help full in this question when looking at revalidation on sub groups like females, older age physicians, ethnic minorities and peripheral doctors. However, this would not serve the purpose of the study and lead to more conflicts among different groups. In my view, the pragmatism is the best approach considering the research question and expected outcome of this study. This is because pragmatism provides a philosophical basis for research with not committing to any one system of philosophy and reality. Therefore, I can use both quantitative and qualitative assumptions and inquiries when engage in this research. Better freedom on methods, techniques, and procedures of this research method gives opportunity to use mixed methods and ability to look for intended consequences and outcome. Therefore, better suited for the purpose and giving the ability to accommodate social, historical, political, and other contexts with consideration on social justice and political aims (Creswell, 2014).

3.3 Positioning of the research using 5P's framework

In this study I have chosen pragmatic stance with mixed method design. The mixed-methodological research was one of the end results of paradigm war and some authors have termed it as the "ceasefire agreement" for paradigm war while some others including Tashakkori and Teddlie identified MMR as 'a third methodological movement. As described by Teddlie and Tashakkori (2010),

there are different paradigmatic stances taken within mixed method research. These include following models.

- the a-paradigmatic model/ pragmatic model
- the substantive theory model
- complementary strengths model
- multiple paradigms model
- dialectic model
- single paradigm model.

On considering all the models I place myself into a-paradigmatic stance as it is more appropriate in solving real life problems.

Historically, most health system research has focused on the positivist paradigm and therefore followed the quantitative approach. However, increasing use of qualitative approach was observed during last few decades. The methodological choice is not a random choice but driven by philosophical assumptions of the researcher and the problems under study. As researcher using a pragmatic stance and research problem is more focused on a real-life problem, the pragmatic mixed method is the best approach for answering the research question.

The scope of the problem under study is very vast and it has taken more than few decades in The United Kingdom to establish a comprehensive revalidation system suitable for the use within NHS. There are many qualitative and quantitative types of research in The United Kingdom before establishing current revalidation process. However, umbrella project on evaluation of revalidation in the UK also now using mixed method research due to pragmatic reasons. Pragmatism is considered as one of the most important characteristics of a mixed method research. Pragmatism also bridges the methodological stance with philosophical assumptions(Tashakkori and Teddlie, 2010).

Johnson and Onwuegbuzie (2004) had described the philosophical position and pragmatism. "*We agree with others in the mixed methods research movement*

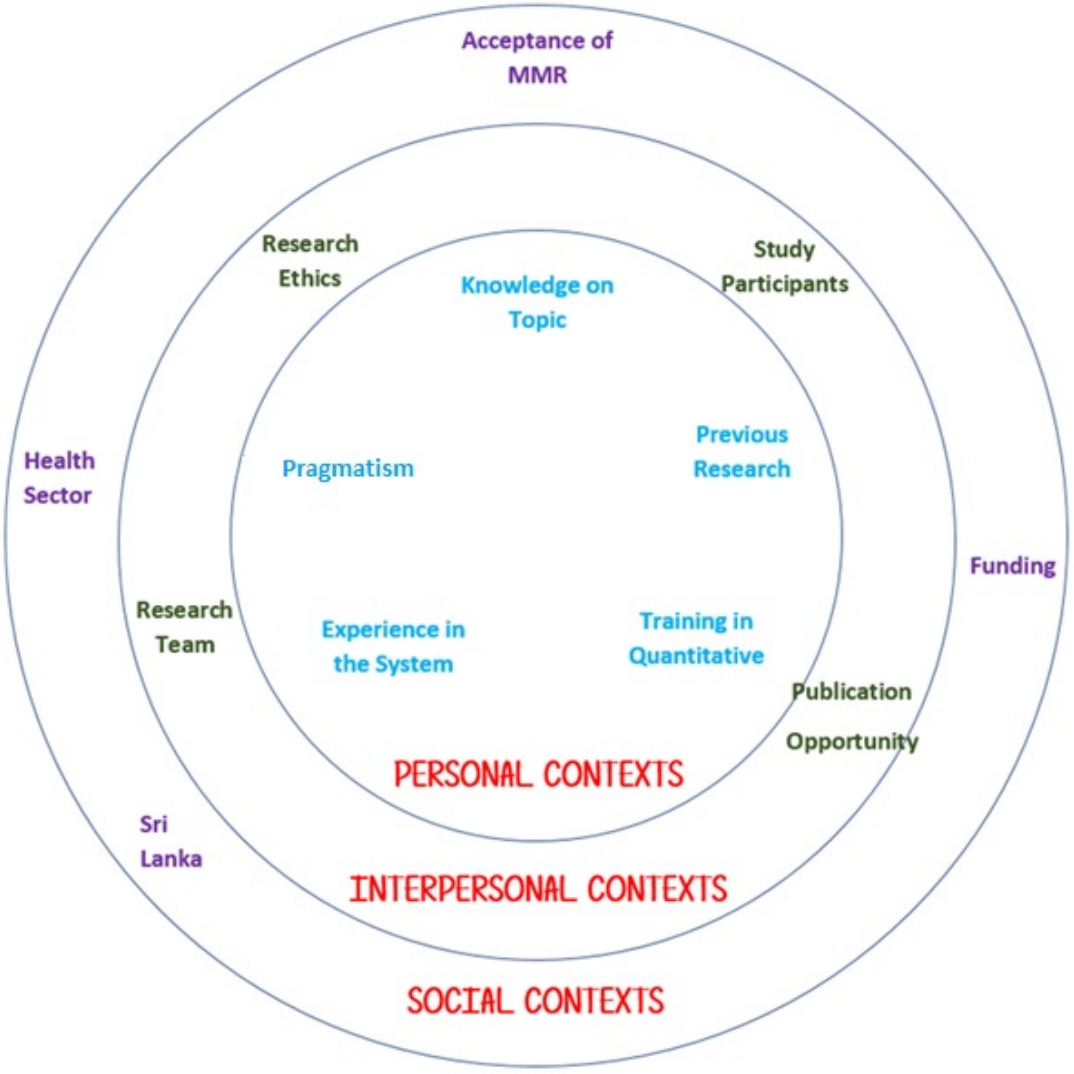
that consideration and discussion of pragmatism by research methodologists and empirical researchers will be productive because it offers an immediate and useful middle position philosophically and methodologically; it offers a practical and outcome-orientated method of inquiry that is based on action and leads, iteratively, to further action and the elimination of doubt; and it offers a method for selecting methodological mixes that can help researchers better answer many of their research questions" (Johnson and Onwuegbuzie, 2004). The amount of money and time is a real constraint when it comes to a developing country like Sri Lanka. Also, there are many lessons we can learn from research studies already conducted in other countries. So, low-cost and outcome-oriented research studies are required. Thus, an innovative research method that requires fewer resources is more suitable. In addition, mixed method study integration provides more comprehensive and acceptable results. Praxis, proficiency and politics are discussed with the socio-ecological framework.

3.4 Socio-Ecological Framework

I have used the Socio-Ecological Framework suggested by Clark and Ivankowa to position myself and the research. The following figure illustrates the socio-ecological framework, which will be considered at all steps of research methodology. The study is conducted in a real life dynamic system. Therefore, it has a wide social context within which multiple interpersonal interactions occur. In addition, personal context plays a key role in approach to the research.

Figure 3-3 summarises the social, interpersonal and personal context of the research.

Figure 3-3: Socio-Ecological Framework



3.4.1 Social Context of the Study

Sri Lanka is a middle income developing country and there is low spending on research. The funding is rarely available for social research and most researchers are conducted either from the personal budget or with the help of non-government organisations. Sri Lanka expenditure on research and development is very low and remains at 0.1% GDP compared to world average of 2.124%(UNESCO, 2013). Therefore, low-cost research is planned, and mixed method study is suitable and cost effective to achieve the objectives. Increasing number of researchers in healthcare is now undertaken in mixed method around the world. There is good literature on integration of quantitative and qualitative data in health system research. It was also highlighted that integration of various type of qualitative and quantitative data can generate deeper understanding into the research question (Tariq and Woodman, 2013). There are many instances where mixed method design was used in Sri Lankan health sector. In the central province of Sri Lanka, a mixed method research was carried out to analyse culture-specific intervention programme in mental health (Creswell and Clark, 2011). In addition, the mixed method approach is used in programme evaluation in many instances in Sri Lankan context (Nastasi *et al.*, 2007). Thus, the social context of the research is suitable for the use of mixed method approach to the study.

3.4.2 Interpersonal Context of the Study

Interpersonal context also plays a major part when deciding on mixed method approach as per the Socio-Ecological Framework suggested by Clark and Ivankowa. Interpersonal context includes research team, research ethics and research participants. My research team include two supervisors from the University with one of them is more interested in ethnographic, action research and qualitative methodologies. She is also open for use of innovation within the research project (London Metropolitan University, 2017a). The other supervisor is interested in organisational behaviour in human resource management and has experience in quantitative research (London Metropolitan University, 2017b). Thus, my research supervisors provide me with a solid platform for using mixed

methodological approach. In addition, research participants will include mostly professionals and university academics and use mixed method will help me to generate rich data on the subject. In my opinion, there are no additional ethical issues using mixed methodologies for the research questions. I have considered possible dilemmas and discussed more in ethical consideration section below in this chapter. Also, there are plenty of publishing opportunity for mixed method studies. Thus, interpersonal context favours the use of the mixed methodological approach to the research question.

3.4.3 Personal Context of the Study

As explained earlier, I, being living in Sri Lanka from my birth has given me the opportunity to understand the different cultures of Sri Lankan communities. In addition, I studied medicine at Sri Lankan university and worked in MOH – Sri Lanka as a medical doctor, middle-grade medical manager and senior medical administrator. I have worked in various parts of the Sri Lanka and had undergone local training in community medicine and master's programme in medical administration. Thus, having good knowledge and practical experience on the present health care system in Sri Lanka, in both curative sector and preventive sector. In addition, my work experience included a significant exposure to provincial health management as well as central health management. As a researcher, I have conducted two types of research on closely related subjects and I have published an article on Perceptions on CPD Programmes and Knowledge and Perception on Introducing a Process for Medical License Revalidation in Sri Lanka – A cross sectional study among medical professionals in Sri Lanka (Kavisekara and Sanjeewani, 2017). The study had given me the initial research idea on the development of this research study. In addition, I have had discussions with a various individual on this subject following my initial study and encouraged me to develop a revalidation process for Sri Lankan medical professionals.

In addition, I had the opportunity to get the general GMC- UK registration as a medical doctor and could work in various NHS trusts as a junior doctor in mental health. This has given me the first-hand experience on revalidation as a medical doctor. In addition, I was able to engage with other junior doctors, consultants and responsible officers as well as other organisations involved in revalidation process in the UK.

My previous research methods were positivist and quantitative. However, I could see drawbacks of only considering quantitative data. There was a need for clarifications on certain findings and sometimes the questionnaires were not adequate to get the full picture of the problem. Also, as explained earlier in this chapter, being a practising professional, I believe that the research outcome should work in the real world. I do not believe on the false dichotomy of paradigms and we should take a more pragmatic approach to the real-world problems. Modern medicine is mostly evidence based and dynamic. The truth is not concrete but what works best considered as the “truth” in the real world. Even in the modern clinical medicine follows evidence based medicine and clinical medicine is more pragmatic now compared to the past. Thus, in practical and action-oriented research, the pragmatic approach is more suitable and help to achieve the objectives of the study. Pragmatism discards both views on constructivism and positivism but embraces both points of view. The pragmatic researcher can either be objective and subjective in his epistemological positioning over the course of studying research question. On the axiological ground pragmatic researcher believe that inquiry is value free. Also, pragmatic research is driven by anticipated consequences and his choices about what and how are conditioned by expected end results (Subedi, 2016).

3.5 Being an Insider within the research

As explained earlier, I consider myself as an insider to the research in certain aspects. Being an insider is a unique position which can give you lot of benefits.

However, the benefits can lead to serious bias which may hamper the validity of the outcomes. Vygotsky in 1962, introduced the concept of 'social situatedness' which arises from the relationship between he researcher, your position in the organization and the context (Vygotsky, 1986). There are few key advantages for an insider researcher as they have

1. A greater understanding of the culture being studied
2. a flow of natural social interaction
3. an established familiarity which promotes both the telling and the judging of truth
4. knowledge on the politics of the institution

Many researchers argue that above can be immensely helpful in conduction the research. For an outside researcher it may take long time to orient to the organizations (Unluer, 2012). However, all the advantages of being insider is associated with unique set of problems. There is need to understand problems to overcome these problems and to minimize their effect on the research. Some of the disadvantages of being insider are

- greater familiarity leading to loss of objectivity
- incorporation of wrong assumption unconsciously
- trying to prove researcher's assumption and perspective about the research question rather than getting independent opinion
- role duality and associated confrontations

The most important aspect of reducing problems of insider research is the acknowledgement of possibility of bias of being insider. I have used similar approach to Unluer (2012) to describe the steps I have taken to minimize insider bias (Unluer, 2012). The main themes include

- My role as the researcher
- The aim and research questions of the study
- Issues of the research design
- The collection and analysis of data
- Ethical issues

- Reporting the data

My role as an employee of MOH was explained earlier in this chapter. However, as a researcher I had experience on the subject as my previous research studies were based on the same subject of revalidation. Most challenging area was qualitative elements of the study as I was new to the qualitative research arena. However, acceptance as a medical director helped me a lot to orient myself as a researcher. The aim of the research was to develop human resource management tool that can possible use in the real world and may lead to way of an action research later. I have gained lot of understanding on the subject through narrative literature review of specific countries. The evidence base was different from my personal experience. Since I have use the collected evidence to develop the prototype, there is less chance of my personal perspective affecting the prototype.

Additionally, the research design I have used was very useful in eliminating insider bias. The problem of validity and objectivity is important in all the paradigms but more in the positivist paradigm. As in this study I have taken the position of pragmatism the effects of insider research are comparatively less. Also, incorporation of mixed methods has also contributed in overcoming insider bias. Additionally, as I am currently fully released from the responsibilities of my job, the role duality is virtually eliminated. However, ethical issues related to the anonymity of the organization and individual participants was one area which was challenging. As the researcher, I explained this clearly to participants in both stages of the research. However, since I am a medical director in MOH, a powerful administrative position, it is likely to affect expressing opinion at the qualitative stage. However, I have selected institutions and individuals carefully to minimize the effect of that.

3.6 MMR design

As discussed, mixed method was chosen as it appeared to be most suited research design for the research problem. Mixed method research will be more suited as it answers the research questions from multiple perspectives and bears following characteristics

- Resource – effective
- Fewer gaps and less missing information
- Increase the validity of results
- Less likely to be biased by pre-existing assumption of the researcher

Quantitative or qualitative method alone will not adequate to answer the research question fully (Creswell and Clark, 2011)

There are different models of mixed method studies regarding the timing of qualitative/quantitative component and data integrations. Different authors have used a different number of designs. Creswell and Plano Clark has suggested following designs in their book on Designing and conducting mixed methods research(Creswell and Clark, 2011).

- convergent parallel design
- Explanatory sequential design
- Exploratory sequential design
- Embedded design
- Transformative design
- Multiphase design

There are advantages and disadvantages of using each method and discussing them here is beyond the scope of the report. However, one of the strengths of the exploratory sequential design is to develop and test new tools (Creswell and Clark, 2011). Therefore, I have decided to use exploratory sequential design as it is best suited in my research scenario. The exploratory sequential design is shown in Figure 3-4 and how it interrelates on the socio-ecological framework in Figure 3-5.

Figure 3-4: Exploratory Sequential Design

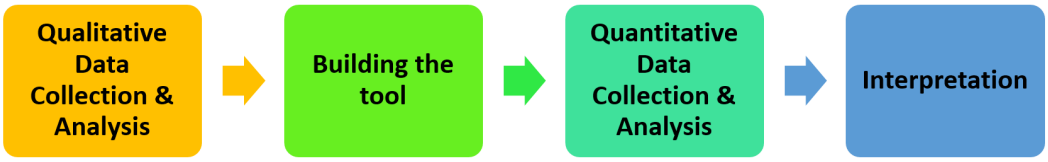
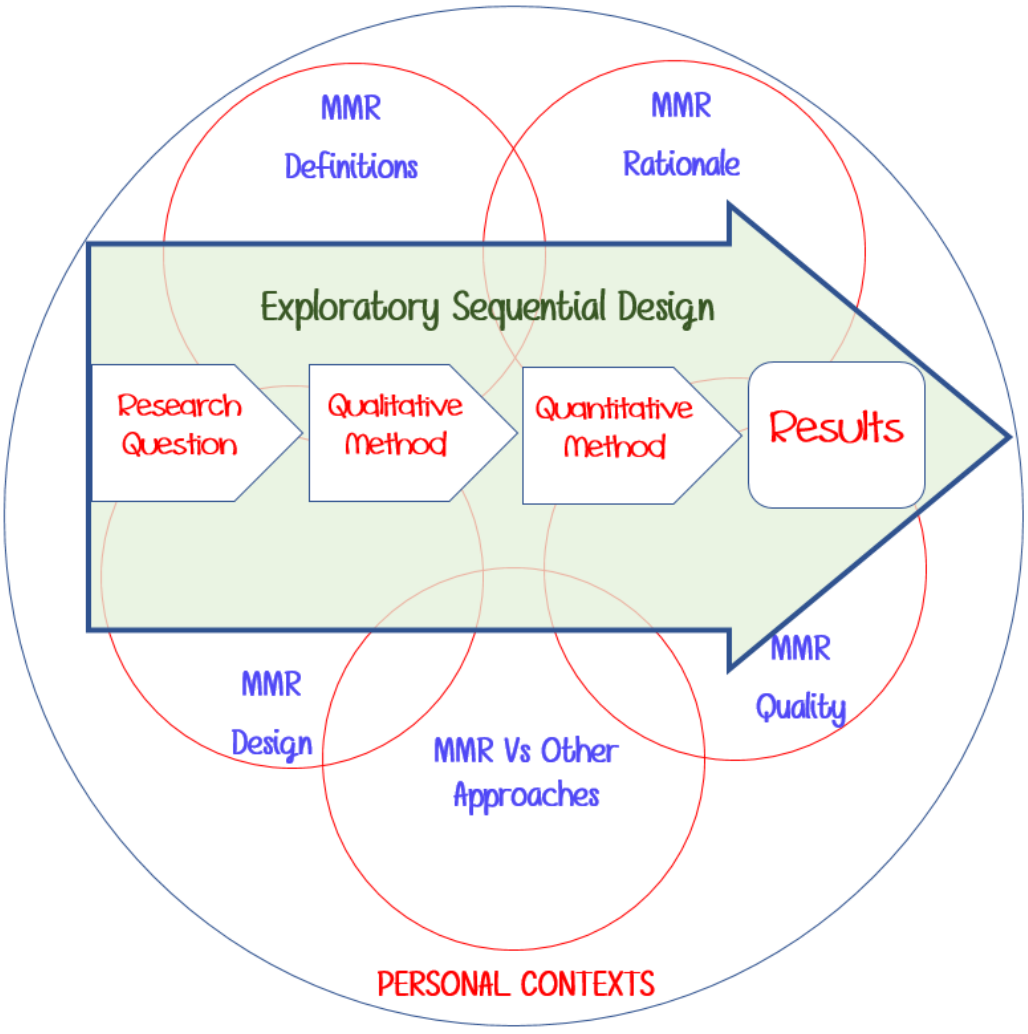


Figure 3-5: MMR Design



The exploratory sequential design is also known as instrument development design. In this design, first qualitative data of the relatively small number of participants is used to develop an instrument and the latter is used on a larger sample to generalise the findings. As the primary intention of this study is to develop and test a tool for revalidation of Sri Lankan doctors, the exploratory sequential design is ideal for use in this scenario. However, slightly modified nature of design is used to reduce the cost and the improve the efficiency of the design and is discussed in a contextual framework.

3.7 Conceptual framework

The research is conducted in the complex social system and highly dynamic field. The research outcome is intended to bring change into the existing system and can lead to conflicting interests. Figure 3-6 shows the conceptual map for the study.

Figure 3-6: Conceptual Framework

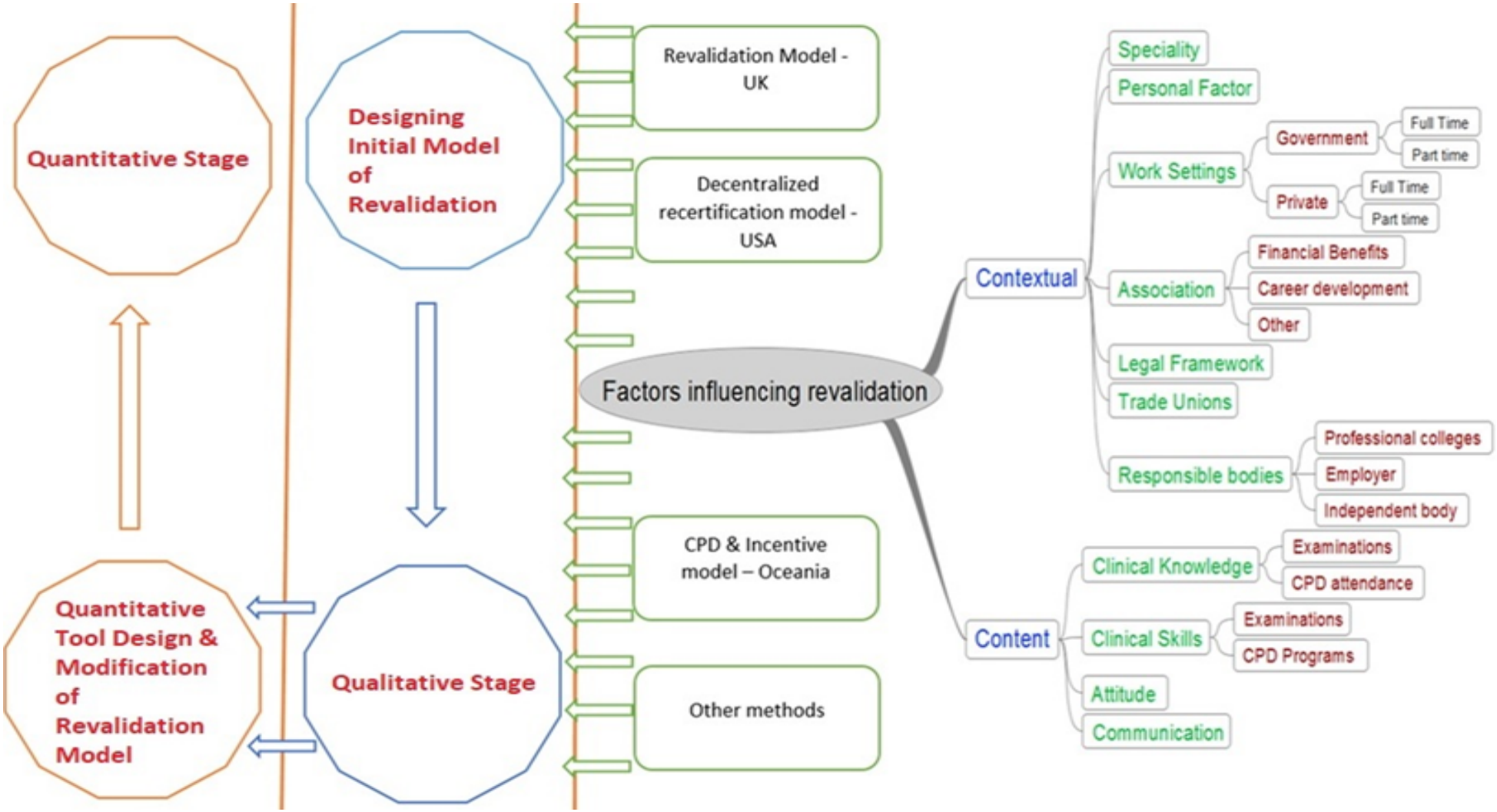
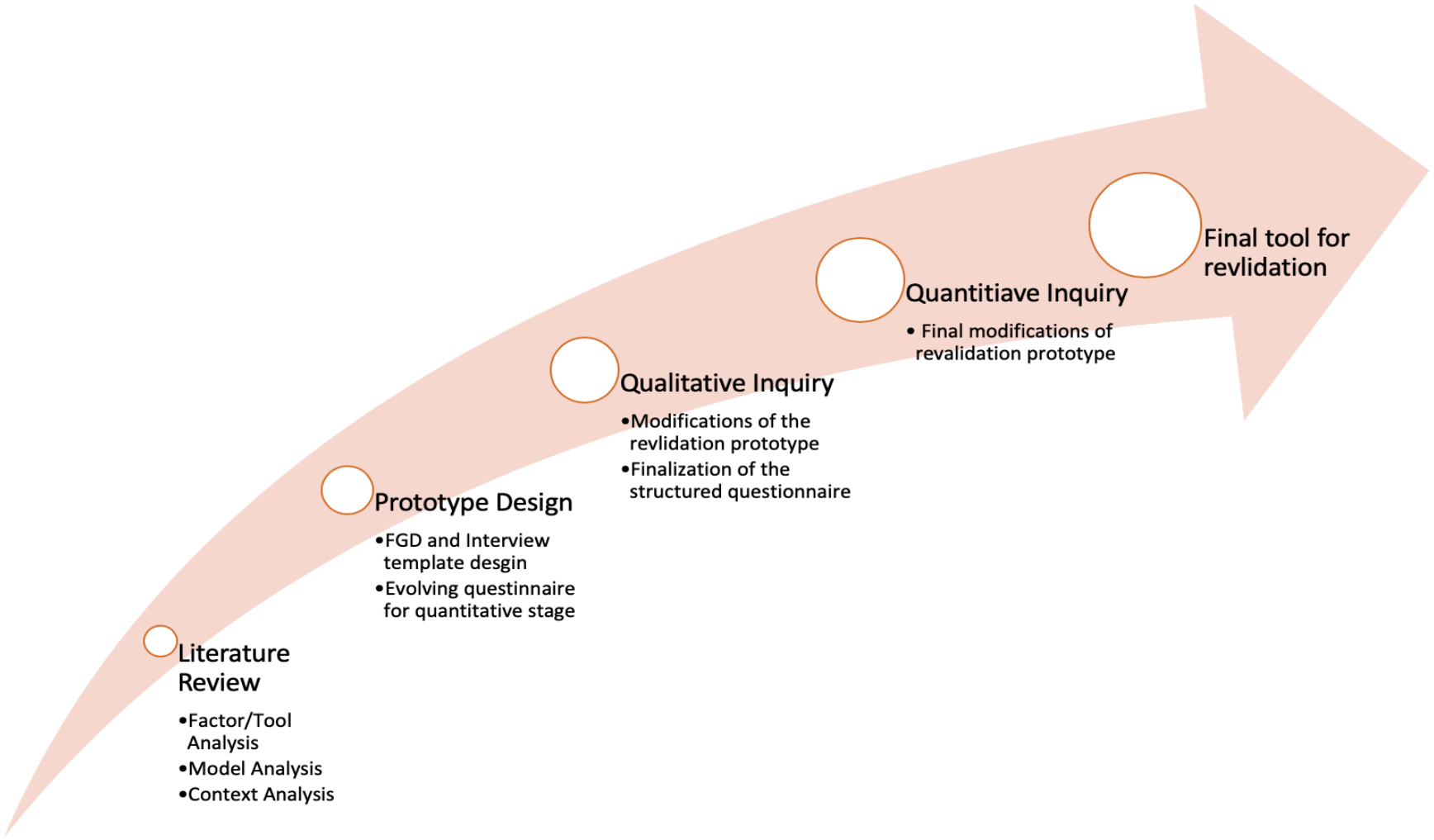


Figure 3-7: Process of the study



As shown in the Figure 3-7, the study is conducted in 5 key stages.

Stage 1

As discussed in the chapter on introduction and literature review, best available comprehensive revalidation system at present was GMC- UK model. However, there were many models of revalidation tested in different contexts. An extensive literature survey was carried out to find different models available for revalidation in countries with better healthcare system than Sri Lanka (model analysis). Also, effectiveness of different revalidation tools was also done during the narrative literature review in chapter 2. After identifying key activities on revalidation, a literature survey on the effectiveness of each activity was conducted and discussed in detail in chapter 2 (factor/tools analysis).

Stage 2

With the knowledge gained from above steps and using the practical knowledge on the health care system in Sri Lanka, I developed initial revalidation tool for Sri Lankan doctors. On developing the model, as the researcher, I have used my personal experience as a medical doctor in Sri Lanka, a medical administrator in Sri Lanka, a citizen of the country and as a junior doctor in NHS - UK. In addition, data gathered on different models from other countries will also be used. At this stage, I have also developed an evolving interview framework for the interviews and evolving structured questionnaire to use in later stages of the study. The questionnaires were developed based on the evidence from the literature review and again from the personal experience.

Stage 3

The product of the first stage will then be subjected to an opinion on different stakeholders of Sri Lankan medical system. I have used Focus Group Discussion (FGD) and in-depth interviews among different stakeholders. Four FGD's were

conducted among grade medical officers, specialised medical officers, para-medical group and medical administrators. In-depth interviews were conducted with the lay group, one member of the board of Sri Lanka Medical Association (SLMA), two GMOA officials, one university academic and one professional college representatives. A number of participants were not decided initially but decided by data saturation and other constraints.

Stage 4

The data gathered on stage 3 was used to modify the questionnaire for quantitative stage and used for the modification of the initial revalidation model done accordingly. A structured questionnaire for the quantitative stage was developed to analyse perception among medical doctors on the newly developed system. The questionnaire is discussed below.

Stage 5

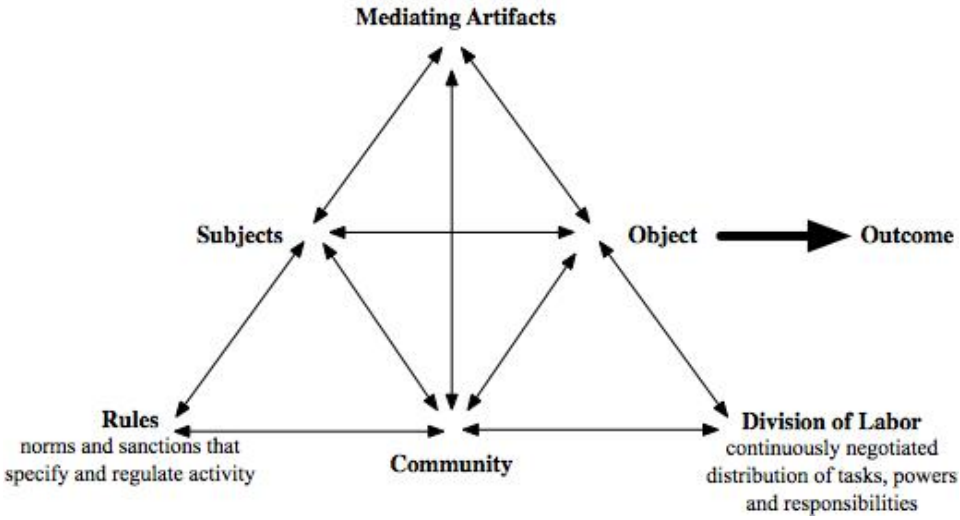
As the final stage of the study, the questionnaire was distributed to medical professionals and was analysed using Statistical Package for Social Sciences. The results are discussed in a separate chapter. In addition, the final model for revalidation was developed and it will be provided to the ministry of health Sri Lanka at the end of Doctor of Business Administration (DBA) programme.

3.8 Cultural-Historical Activity Theory

Cultural-historical activity theory (CHAT) is based on the studies of Vygotsky and his student Leont'ev from 1920's. CHAT is a family of related theoretical perspectives that provide a framework for understanding social and cultural practices. It focuses on collective social practices such as organisational settings and reflects the complexity of real-life functions. In addition, CHAT also stresses action or intervention to develop human resource practices and their implementation. Therefore, CHAT can offer researchers in social sciences with a methodological framework for investigating human resource activities in real life institutions. It clarifies different motives of each participant and exposes contradictions. These contradictions help better understanding of the processes and to identify any required changes to bring about

improvements to the system. CHAT uses an entire process as a unit for the analysis and the unit is divided into analytical components. Original CHAT uses only three components as subject, tool and object. However, Engestrom's modification of CHAT included two additional components namely rules and division of labour. Rules are socially constructed and effect on the way of individual person's act. Division of labour presents operations of workers and represents the hierarchical arrangement of social systems. Together with rules and division of labour together represents the community. Figure 3-8 is a summary of Engestrom's model on activity theory (Engeström, Miettinen and Punamäki-Gitai, 1999).

Figure 3-8: Engestrom's modification of CHAT



In this study, the unit of analysis represents the revalidation process. As revalidation is a complex activity which involves multiple interaction and contradiction, Activity Theory is an ideal tool. Activity theory has used by many researchers around the world for studying complex social phenomena including in education and in healthcare (Wilson, 2014). One of the studies conducted to find cultural complexity in medical education had used the activity theory due to the complexity of the nature of the study. It was suggested to use CHAT for the complex problem such as medical revalidation (Frambach, Driessen and van der Vleuten, 2014). A similar study conducted for Australian Medical Board (AMB) also used activity theory as a conceptual framework for their study (Archer *et al.*, 2015). Since medical revalidation is a complex subject and Sri Lankan society represent medical pluralism and nature multicultural community, CHAT can provide a framework for the analysis of the research problem.

3.9 Study Setting Qualitative Stage

The study has focused on medical professionals in Sri Lanka. Thus, the study is conducted in Sri Lanka. A wide range of stakeholders was chosen as research

participants. The qualitative stage composed of FGDs and in-depth interviews. There were four FGDs conducted among grade medical officers, specialist medical officers, paramedical group and lay group. Location of the FGD's was selected based on convenience and accessibility. As this was a self-funded study, I had to organise FGD's in cost effective way and no incentives were given to the FGD participants. I conducted two FGD's on a District General Hospital – Trincomalee as I was one of the former directors of that hospital and I had the free access to the hospital. Two FGD's were conducted in 2 consecutive days among grade medical doctors and para-medical group. All FGD's were conducted in English language but participants could express themselves even in the Sinhala language. FGD among specialist medical doctors was conducted at Nuwaraeliya District among consultants working in Nuwaraeliya Hospital and was conducted outside working hours. FGD among lay person was conducted in Kandy District in Central Province. In addition, FGD on medical administrators was conducted at SIrimawo Bandaranayake Specialized Children' Hospital in Peradeniya. I did not provide any incentives for research participation and informed consent was obtained from each participant.

In addition, in-depth interviews were conducted among officials of following organisations

- SLMA
- Medical Administrator
- Government Medical Officer's Association (GMOA)
- University Academics
- General Public

In-depth interviews were carried out at places of convenience to the interviewees on the dates convenient for both parties. I did not provide any incentives for research participation and informed consent was obtained from each participant.

3.10 Ethical issues in focus group discussion

Focus group composed of open discussion among participant and encourage cross arguments on important topics. Therefore, in FGD's individual 100% anonymity and 100% confidence may not be feasible and is shared by the group (Smith, 1995). However, anonymity and confidence as a group were discussed and all participant were requested not to discuss the individual opinion of other with reference to their names outside the FGD. Since, all four FGD's were conducted among competent and educated adults who were aware of the importance of confidence, confidentiality and research ethics, I was fairly satisfied with their assurance on this. This was discussed at the beginning of all FGD's and all participants were given information sheet and consent form to read and signed. A copy of information sheet and consent form was given to all the participant with full contact details of me. A copy of consent form and a copy information sheet is attached as Appendix. Also, I have disclosed these facts on ethical clearance application forms to the ethical review committee. In addition, the group was requested to respect the contradicting opinion and highlighted the importance of such opinion for the research. Careful consideration was taken to minimise the lead questions and as the sole moderator, I have encouraged open discussion in all FGD's while trying to get an opinion from all the participants.

In-depth interviews were also conducted with a similar process and only I have involved in the in-depth interviews apart from the interviewee. All precautions are taken to maintain anonymity and confidence. A copy of the information sheet and consent form was given to all the interviewee with full contact details of me. Some of the participants have verbally given me the freedom to use their names and designation. However, I have not used that freedom as I have not specified such clause in my ethical review application. The ethical clearance was obtained from the Ethical Review Committee of the University of Peradeniya.

3.11 Confidentiality of data

I was involved as the sole moderator in all 4-focus group discussion and all in-depth interviews. In addition, my spouse, a medical doctor by profession was involved in taking special notes and troubleshooting electronic devices. She was aware of the importance of confidentiality of the research process.

The FGD's and interviews were both recorded electronically. Three out of Four FGD's were video recorded while all four FGD's were voice recorded. All voice recordings were transcribed by myself and there was no access for any outsider to the voice recordings. No external person will have access to voice video or voice recording as I have stored them in my personal storage device and all folders were encrypted and password protected. All transcriptions will be kept with me for prescribed period for the verification process and will be stored in a locked cupboard in my permanent residence in Sri Lanka.

3.12 Study Setting Quantitative Stage

3.12.1 Inclusion Criteria

Medical professionals with full SLMC registration and working in Teaching Hospital Kandy and Teaching Hospital Peradeniya. This was primarily due to cost and convenience of conducting the research. Medical service in Sri Lanka is an all island service. Medical doctors have freedom to get a working station based on individual preference and seniority of the ministry. There is a chance that the sample may not fully representative of Sri Lankan doctors.

3.12.2 Exclusion Criteria

Intern medical officers as they do not have full SLMC registration

Administrative grade medical professionals as there are only 4 of them available in selected hospitals

Medical professionals on any sort of leave including maternity leave, foreign leave during the study period

3.12.3 Sampling

Sample Size Calculation

The sample size was calculated using following formula.

$$n = \frac{Z^2\, p(1-p)}{d^2}$$

n = Sample size

Z = 1.96 critical value of specified confidence interval

p = Probable estimate of proportion

d = 5% Accepted amount of absolute error

$$Sample\ Size = \frac{1.96^2 * 0.5(1-0.5)}{0.05^2}$$

$$Sample\ Size = 384$$

Further 20% was added to calculated sample size, as similar studies respondent rate around 70-80%, to compensate non-respondents and it yielded a total sample of 461 subjects (Ranasignhe, 2010).

Sampling Technique

There were 1640 eligible medical professionals in the population. The Table 3-2 is categories population into their respective grades in two selected hospitals.

Table 3-2: Sampling Population

Hospital	Consultants	Grade 1 doctors	Grade 2 doctors	Preliminary Grade doctors	Post-Graduate Trainees	Total
THK	125	348	603	132	116	1324
THP	26	82	133	41	34	316
Total	151	430	736	173	150	1640
Sample	42	121	207	48	42	460

The list of the names and salary number of the doctors were obtained from the respective institutions. Stratified random sampling technique was used to select same proportion from each grade and summarized int table below (Table 3-3).

Table 3-3: Selected Sample and Its distribution according to the Hospital and Grades of Doctors

Hospital	Consultants	Grade 1 doctors	Grade 2 doctors	Preliminary Grade doctors	Post-Graduate Trainees	Total
Population	151	430	736	173	150	1640
Sample	42	121	207	49	43	462

3.12.4 Study Period

Data collections for the quantitative stage was conducted at the respective institutions from 07/05/2017 to 21/05/2017. The study period was very short, but

the circumstances required to collect data only for a short period of time. However, recruitment of data collectors make it possible to collect data during the specified period.

3.12.5 Data Collection Tool

I have used a self-administered questionnaire with closed-ended questions for data collection. The questionnaire was developed specifically for the research by myself as there was no suitable questionnaire available. The knowledge from previous studies, literature survey and the understanding from the qualitative analysis was used in questionnaire development. The questions were phrased to conform the scaling requirement, content validity and the face validity of the study. The questionnaire was scrutinised by a community physician and a social researcher. The questionnaire was also pre-tested with a sample of doctors from Kandy district for identifying problems of understanding and problems of ambiguity.

The final tools composed of 2 sections and 36 questions.

1. Section 1 - Basic socio-demographic data (8 questions)
2. Section 2 - Perception on CPD & Revalidation process (28 close-ended questions questions)

The questionnaire was kept as closed-ended questions due to following reasons

- Better objectivity
- Easy coding for analysis
- Quick completion time
- Convenience for participants to fill
- Improve willingness to participate
- increase response rate

- Maintain the focus on the subject under question.

A Modified Likert scale was used in the most question to avoid centralization of responses and is considered better for assessing perception.

Then the questionnaire was discussed with 12 data collectors, who are 4th-year medical students. They were explained in detail about the study and the questionnaire. In addition, information sheet, which was prepared as per the guideline from ethical clearance provider, and the consent forms were explained in detail. Each data collector was assigned 35 questionnaires and was requested to carry out data collection during the study period and each one was given a separate name list of doctors to avoid duplication. Since the data collection was done for 14 consecutive days including public holidays each data collector need to get data collected from about 2-3 respondents a day. I have personally collected data from the consultant group.

The questionnaire is attached as Appendix 0.

3.12.6 Ethical and Administrative Consideration of Quantitative Stage

Ethical clearance was obtained from the Ethical Review Committee of Faculty of Medicine, University of Peradeniya. The consent forms and information sheets were prepared as per the guidelines of the ethical review committee in all three community languages despite the research was conducted in the English language. English documents used for applying ethical clearance is attached as an Appendix at the end.

Permission from Directors respective hospitals was obtained prior to data collection. Each participant was given a copy of consent form and information

sheet with all relevant information and the full contact details of me. They were requested to contact me for any clarification. They were given the option to withdraw from the study without any problems.

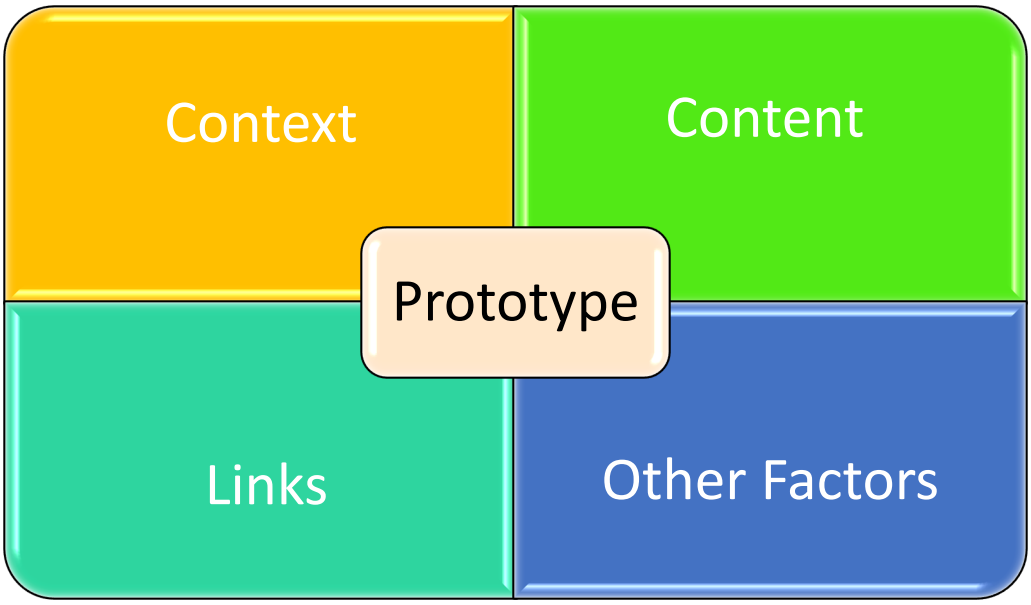
3.12.7 Confidentiality of data

All the questionnaires were collected on the same day of distribution and only the principal investigator and 12 data collectors. Data collectors, 4th-year medical students, were informed about the confidentiality of data was involved in the collection of data. All completed questionnaires were collected on the same day as completed. All completed questionnaires are at the custody of principal investigator in a locked cupboard at the principal investigator's residence. All data collection tools will be kept for prescribed period for verification purposes. No personal data was collected.

4 Revalidation Prototype

The primary intention of this study was to develop a revalidation process for Sri Lankan medical doctors. I have designed this revalidation prototype for Sri Lankan context to speed up the development and possible later implementation of revalidation system for Sri Lankan doctors. I have used my knowledge and experience in Sri Lankan society, Sri Lankan health care system and medical knowledge on developing this prototype. In addition, a literature review has provided robust evidence of different methods and tools available revalidation process. Also, I have explored the pros and cons of methods in the literature review. I have discussed the registration process for medical doctors in introduction and organisation of Sri Lankan health ministry in the later chapters. The revalidation prototype will be discussed in context, contents, links and other factors affecting revalidation in a specific country/ territory as shown in Figure 4-1.

Figure 4-1: key areas of revalidation prototype development



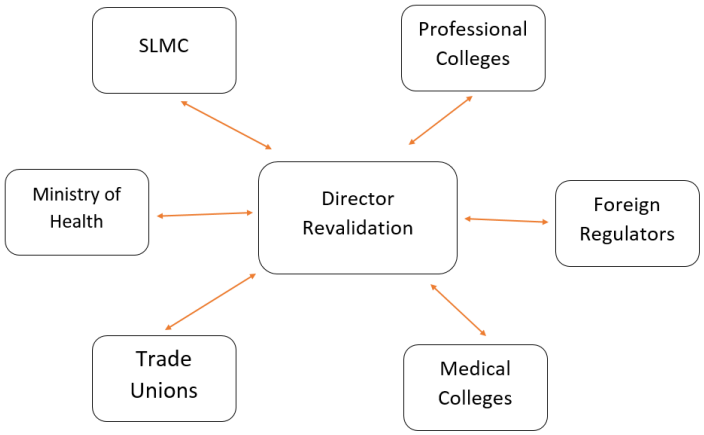
4.1 Context of Revalidation

In Sri Lanka, SLMC is responsible for regulating medical registration while the MOH is the major employer for doctors. In addition, the private sector and individual private practices are regulated by the private health regulatory council of the MOH. All, institution comes under the purview of Health Minister as SLMC is also under the MOH (Democratic Socialist Republic of Sri Lanka, 2014). Thus, initiative and the leadership should be taken by the MOH.

I proposed to form a new directorate in the MOH as revalidation directorate to coordinate the revalidation process. The directorate will compose of important stakeholders including the MOH, SLMC, Medical Colleges, Professional colleges, trade unions and foreign regulators. The creation of additional director post in existing health ministry hierarchy will facilitate the revalidation process and can be placed under deputy director general – education, training and research. Once established the budgetary allocation and authority will be easy to the new directorate for the revalidation process. It is important to establish separate director for revalidation as the process is expected to be costly. Ministry may need rationalization of costs compared to outcomes. This process will require

Under the director revalidation, a revalidation committee will be placed for technical decision making. Figure 4-2 shows the proposed composition of the revalidation committee.

Figure 4-2: Composition for the proposed revalidation committee in the MOH



It is recommended to use existing resources for revalidation Directorate in terms of manpower. Most of the central ministry human resource (HR) functions are currently done by establishment branch. These include recruitment, grade promotion and annual increments. As revalidation and appraisal can replace annual increment system some of the existing staff can become redundant. Those redundant resources can use to staff the new directorate. In addition, use of information technology can maximise the use of management assistants.

Revalidation Committee (Figure 4-3) should take the leadership of implementing the leadership on final revalidation model and the committee need to take

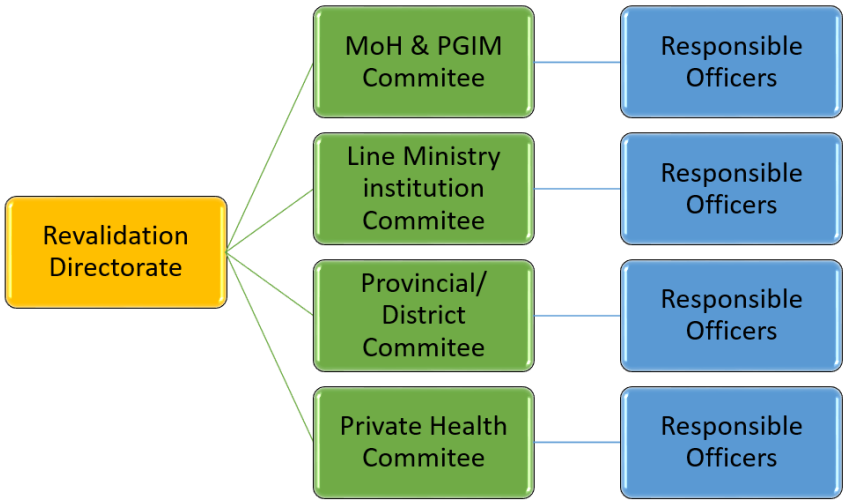
Clarification of purpose and communication with stakeholders – may need piloting in limited context

- Arranging legal requirements for new system
- Facilitation and resource provision
- Designing quality control process

There is no need for completely changing doctors' contract. Minor alteration in the contract to accommodate revalidation would be adequate. This is further

discussed in the chapter on discussion. Some of the function of HR management of doctors are currently delegated to relevant provincial councils. In line with the delegation, there will be revalidation sub-committees for centrally managed doctors, line ministry institutions, provincial health ministries and one for the private health sectors. The composition of each of the revalidation subcommittee will be composed of an at least medical administrator, medical tutor, specialist doctor/ college representative, grade medical officer, trade union representative and a lay person. The composition can be adjusted according to the research outcomes. Each revalidation sub committee will nominate a responsible officer for the region. Every doctor working in the region will have a nominated responsible officer. The responsible officer will be either medical director or the regional director and will be supported by another medical doctor who is qualified in medical education or biomedical informatics. However, there will be need of capacity building program on revalidation for the responsible officers and their supportive staff. The doctors are subjected to annual transfers in every 4 years and it may be sensible to change the transfer period for 5 years to make it in-line with revalidation. Therefore, the revalidation process can be implemented with minimal interruption to existing appointment and transfer policy in the MOH. Every medical officer who is working more than six months of 1 calendar year in one institution will have to submit appraisal report based on his/her activities relating to revalidation. Appraisers should be named by each regional committee and the individual doctors will be given the option to select one of them based on their speciality. This will be helpful in reducing personal factors affecting revalidation outcome.

Figure 4-3: Supporting committees for revalidation directorate for the implementation of revalidation process



Following categories are suggested for the composition of each revalidation subcommittee and will be adjusted based on the responses from the research participants.

Central Revalidation Board

- DGHS/DDG-ETR
- Director Revalidation
- SLMC Representation
- SLMA Representation
- Professional college representative
- University representation
- Trade union representation
- Non-medical representative

The MOH & PGIM Committee

- Director Revalidation
- Director PGIM/nominee
- PHRC representative
- Professional college representative
- Trade union representation
- Non-medical representative

Line Ministry Institution Committee

- Hospital Director
- Medical Officer – Revalidation
- Consultant Representative
- GMOA Representative
- Non-medical representative

Provincial/ District Committee

- Provincial Director
- Medical Officer – Revalidation
- Consultant Representative
- GMOA Representative
- Non-medical representative

Private Health institution

- Medical/ Clinical Director
- Consultant Grade Doctor
- Non-consultant grade representative
- Trade union representative
- Non-medical representative

Functions of the committee shall include

- Each subcommittee will identify responsible officers for each region.
- Revalidation documents should be forwarded to the relevant committee
- Revalidation Committee will forward approval name list to central revalidation board electronically.
- Central revalidation board will send electronic approval to SLMC for registration purposes

4.2 Content of revalidation

Medical doctors work in wide range of clinical and public health scenarios. Therefore, one concrete structure will not be sufficient for everyone. Thus, like GMC - UK, key domains should be identified. Following domains are suggested for the framework and was based on GMC- UK model

- Knowledge, skills and performance
- Safety and quality
- Communication, partnership and teamwork
- Maintaining trust

The key domains appear universal and can be used in Sri Lankan setting for the assessment of doctors and other professional for revalidation. However significance of each domain will be different based on culture, feasibility, individual preferences and other factors.

As extensively discussed in the chapter on a narrative literature survey, a system composed of multiple assessment tools is suggested. It was found out that there were important characteristics of each method to improve the efficiency, clinical outcome and acceptability. Table 4-1 summarises important characteristics of different revalidation tools as reported on literature review.

Table 4-1: Important Characteristics of different revalidation tools

Tool	Mode	Important Characteristics
CME/CPD	Classroom based	Targeted to a single discipline or related discipline Same grade doctors Limited number of participants Interactive and friendly Dynamic media use Regular and repetitive activities Assessment of outcome regularly
	Online	Interactive with active feedback system Interactive media use Adjuvant to classroom based CME/CPD
Audit		Good organisational support Targeted audit on areas identified in organisational reviews Properly conducted by respected team and report Designed for fact finding and not entirely as fault finding
Feedback		Facilitated feedback with support and encouragement for negative feedback Based on verifiable and reliable sources Extra caution for personal bias Well trained feedback providers
Appraisal		Well designed and structured Opportunity for reflection
Patient complaints		Organisational culture to see this as an opportunity Designed for fact finding and not entirely as fault finding

Except for New Zealand, all other studied countries run revalidation in 5 years cycles. Therefore, a similar cycle is recommended for Sri Lanka. Each revalidation cycle should be composed of

- 200 hours of formal CPD
- At least 10 case presentations/ 10 presentations for public health staff at meetings
- One of the followings
- At least 5 participations for clinical society/ professional college annual academic conferences (recognised programs)
- At least 1 clinical audit/ record audit and 2 presentations of conferences/clinical society meetings
- Obtaining feedback from at least 25 patients and 16 /other health care workers – ideally 8 from medical colleagues and 8 from other categories of health staff. The quantity as well as quality needs to be monitored and assured to obtain expected outcome.
- Reflective account on noteworthy events, achievements and complaints
- Every doctor to submit annual appraisal forms/revalidation forms to the revalidation committee via responsible officer and annual submission should comprise of
- 30 hours of formal CPD
- At least 1 case presentations/ 1 presentations for public health staff at meetings
- Obtaining feedback from at least 1 patients or 1 colleges/other health care workers
- Circumstances letter if he is unable to fulfil above requirements

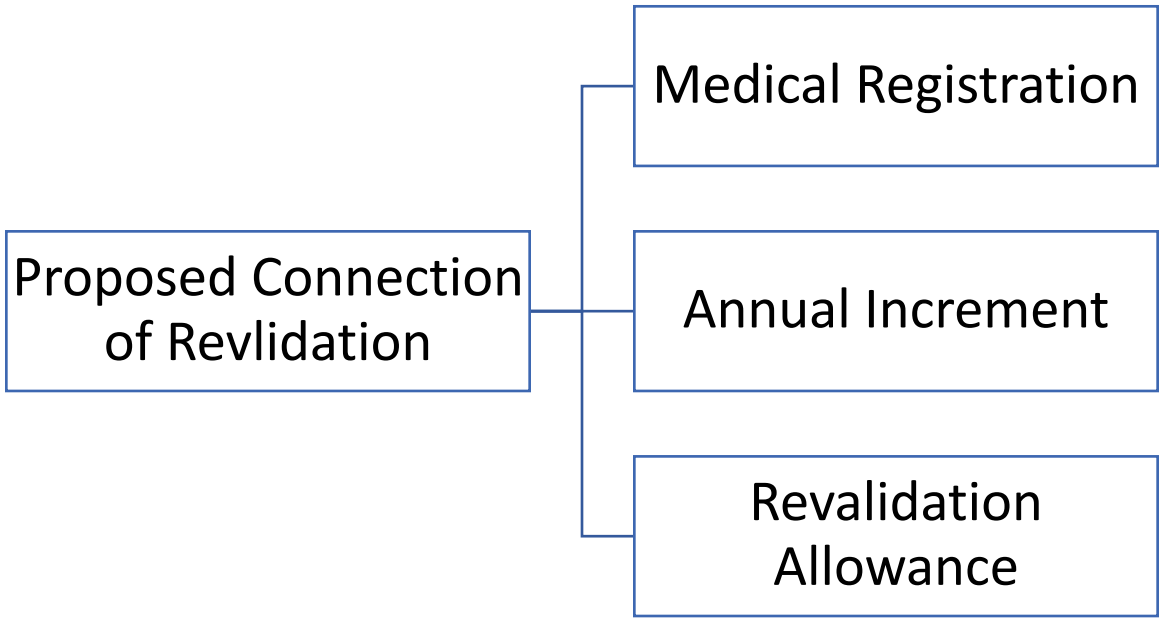
The annual return will replace the present annual increment forms and therefore there will be a reduction of paperwork for medical professionals, appraisers as well as for administrative assistants. These resources can be used as a resource for proposed new revalidation process. There is no data on resource consumption annual increment system or for the proposed system.

4.3 Linkages of revalidation

The proposed revalidation will link to annual increments. However, there will be a resistance for linking revalidation to medical registration initially. Therefore, an alternative approach is needed initially. I suggest that setting up separate registration fee for those who doctors revalidated them and who do not. The second group should be charged more on re-registration. In addition, we can make revalidation compulsory for new registrants and new recruits to the MOH. However, we need to make sure there is equal and adequate opportunity for doctors to engage in revalidation activities.

In addition, revalidation allowance is proposed to increase the acceptance of the new system. As of present research allowance for doctors in Sri Lanka, 25% of basic salary is recommended as the revalidation allowance for those who participated in the process (Figure 4-4).

Figure 4-4: Proposed Connection of Revalidation Process



4.4 Additional information

It is the responsibility of doctor to apply for duty leave from the supervising officer giving sufficient time to arrange cover up

Revalidation allowance will be added to the salary for doctors to cover cost of conferences/ meetings

Clinical societies/ conferences should be registered with revalidation Directorate for quality assurance purposes

All the CPD programs should be registered with revalidation Directorate for quality assurance purposes

4.5 Legal Requirements

There are few changes required in legal documents to implement the proposed revalidation process. At present medical Ordinance of Sri Lanka only requires renewal of registration and stated as “26 A The minister may require persons registered under this ordinance to renew their registration at prescribed intervals and on payment of the prescribed fee“ (Democratic Socialist Republic of Sri Lanka, 2014).

As discussed above, all doctors to The MOH are recruited as permanent and pensionable government servants and there will be problems of implementing mandatory revalidation as what to do with doctors who are unable to revalidate. On the other hand, all present employees can bring a legal challenge against notable change of their job contract. Therefore, an alternative approach is required and need further exploration at the qualitative and quantitative research stages.

5 Qualitative Data Analysis

There is increasing use of qualitative methods and mixed methods in applied social research. Qualitative analysis is important in applied research like this study as it helps to understand the diversity of the social issue and wider implications within the society (Ritchie and Spencer, 2002). In addition, the qualitative inquiry will help to understand complex behaviours of distinct categories of stakeholders in medical revalidation. The previous chapter presented details of the prototype used for the qualitative inquiry. Framework analysis is used in the qualitative analysis of the study and discussed below.

On analysing, I took the more pragmatic approach as this study intended for a practical solution for a real-world organisation. So, I acknowledge distinct perspective of individuals if practicality of such perspectives is worth for implementing the revalidation process in Sri Lanka.

5.1 Socio-demographic characteristics of the sample

The qualitative stage was composed of four focused group discussions and 6 in-depth interviews. Twenty-six individual stakeholders were involved. They were belonged to different categories and their breakdown is shown in Table 5-1. Focused groups were created based on their stakeholder category and each focused group consist only of one category of stakeholders and expected to be helpful in improving freedom of expressing opinions and encouraging arguments without damaging working relationships.

Table 5-1: Number of participant by their stakeholder category

Stakeholder Category	Number
Medical Consultants	7
Grade Medical Officers	5
Paramedical Officers	5
Medical Administrators	3
University Staff Members	2
Medical Association Members	1
Trade Union Representative	1
Public members	2
This table shows the number from each stakeholder category who participated in the qualitative stage of this study.	

The summary of other socio-demographic characteristics is shown in the table below (Table 5-2). Socio-demographic characteristics are very important to consider as there can be significant differences of opinion based on their socio-demographic characteristics. For example, role of female doctors in their family may be significantly different among different ethnic communities and this can considerably affect the acceptance of the proposed revalidation program.

Table 5-2: Socio-demographic characteristics of the qualitative study sample

Gender	**Male**	**20**
	Female	6
Age	21 -30 years	3
	31 – 40 years	11
	41 -50 years	8
	51 -60 years	3
	60 – 70 years	1
Ethnicity	Sinhala	15
	Sri Lankan Tamil	6
	Indian Tamil	1
	Sri Lankan Moor	4
Religion	Buddhist	15
	Hindu	7
	Islam	4
Marital Status	Single	2
	Married	20
	Widowed	2
	Divorced/Separate	2
This table shows the distribution of qualitative stage participants based on some key socio-demographic characteristics of Gender, Age, Ethnicity, Religion and Marital status.		

From the 6 females participated in the study, one was a consultant, one was a medical doctor and others were para medical officers.

5.2 Framework Analysis

Framework analysis is often considered as a part of thematic analysis or qualitative content analysis. Both latter approaches identify cohesions and variances in qualitative data. Then it focuses interrelationship among different sections of data and looks for an explanation on relationships. In the late 1980s, Jane Ritchie and Liz Spencer developed the framework analysis for National Centre for Social Research (NCSR) in the UK and extensively used in many areas including health policy (Ritchie and Lewis, 2003). The most characteristic feature of framework analysis is the use of rows and columns for cases and codes respectively. The arrangement help researcher to systematically reduce the data and analyse. In addition, the arrangement of framework analysis provides the researcher with the opportunity to analyse key themes across the whole data set without losing individual's views and individual connections. It is also very helpful as it

- provides clear steps
- produces structured outputs of data.

Framework analysis is suggested for researchers with minimum experience in qualitative data analysis as 'spreadsheet' style seem more closely aligned to the quantitative paradigm. Framework analysis is also suitable for managing large amount of data and intended to get a holistic, descriptive overview scenario. However, framework method of analysis is not considered suitable for heterogeneous data. The framework analysis is most frequently used for the thematic analysis of semi-structured interview transcripts and focused group discussions. Framework analysis is so systematic and some considered it as a deductive approach to qualitative analysis. However, framework analysis is not a deductive method but a method that can be adapted for deductive, inductive, or combined types of qualitative analysis. Since, framework analysis is not associated with any epistemological, philosophical, or theoretical approach, it is

good for solving real life problems and considered as more pragmatic. However, reflexivity, rigour and quality are pre-requisite in the framework analysis and like any other qualitative methods.

5.2.1 Steps in framework analysis

Qualitative data analysis is conducted in following steps sequentially. However, I have gone back to previous steps as required and as new themes emerge. The steps adopted are

- Transcription
- Familiarisation with the interview
- Coding
- Developing a working analytical framework
- Applying the analytical framework
- Charting data into the framework matrix
- Interpreting the data

Transcription

All audio records of interviews and FGS's were transcribed word for word. However, I did not include the conventions of dialogue as I was more interested in contents for the analysis.

Familiarisation with the interview

I have gone through all the collected data several times and make reflective notes where necessary as this is vital in interpretation stage.

Coding

After familiarisation, I have used NVivo® 11 software to get word frequency and auto coded using the same software. I used auto coding get an idea about codes and coded the transcript manually first as I do not want to miss valuable information.

Developing a working analytical framework

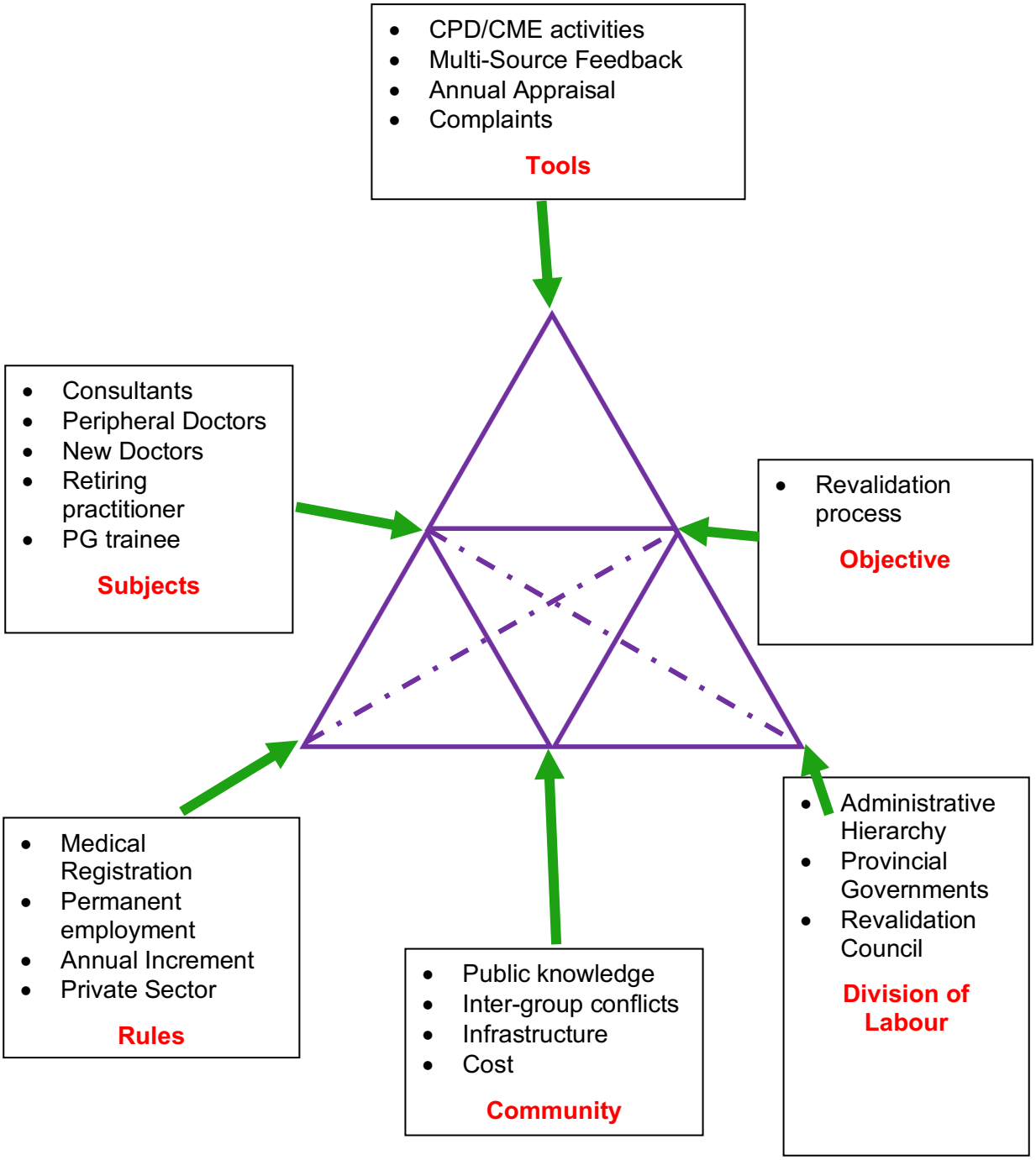
After initial coding, I have prepared key themes and subthemes. Then a tree of themes was prepared manually to see the working analytical framework. The working framework was edited several occasions until no additional codes to be included in the working framework.

Applying the analytical framework

The codes then used for two purposes

- Sort and organise data according to codes and themes
- Map codes on the activity theory triangle as shown Figure 5-1.

Figure 5-1: Codes in Activity Theory Triangle



This figure illustrates key themes used in each node of the activity theory triangle and forms the basis of framework analysis discussed below.

Charting data into the framework matrix

The next step adopted was to map the data into the framework. I have used care to understand the context of opinion while summarising and reducing data to fit into the matrix. The full framework is attached as an Appendix.

Interpretation of the qualitative data

The MOH is one of the largest government organisation and functioning in all parts of the country. The power is dissolved but hierarchical and can have a significant effect on the subject under study. Therefore, I have broken down activity triangles into more smaller triangles to understand the contradicting opinions on different participants and contradiction on different subsystems of activity triangle. A similar approach was used by a researcher in The United Kingdom to identify the effect of collaborative learning within an organisation in IT sector (Mwanza, 2000). Similarly, two studies conducted on revalidation in Australia and the UK had also used activity theory to explain qualitative research evidence (Archer, Bere and Nunn, 2014). However, the research had used them in distinct perspective and will be more discussed in the chapter on discussion and recommendation.

5.3 Results of Framework Analysis

I have identified 21 important themes after screening and manual reading of the transcripts. I have used nVIVO® as my CAQDAS tool. All twenty-six participants and twenty-one themes were taken to a framework and analysis were performed manually. The full framework analysis is attached as Appendix. I have included a summary of conclusions drawn from framework analysis. The original quotes will be discussed later with activity theory.

All participants accepted the requirement of revalidation, which suggested to be based on CPD process, but most of them believed either it must be started as an optional process or to include only CPD activities at the beginning. The need for regulated and streamlined CPD process was identified as the most important requirement of the revalidation process. Responses regarding other tools such as appraisals, MSF and complaints investigation were vague. Many argued that these should be linked to revalidation at later stages. However, almost all respondents believed they should be included gradually but not at the beginning. From the framework analysis, it was evident that both grade medical officers and specialist medical officers should be included in revalidation process from very beginning with some participants suggesting different assessment criteria for two groups. Difficulties face by doctors who are working at periphery was identified as the main barrier for a mandatory introduction. However, the argument was not supported by all participants and some suggested that doctors use peripheral doctors to get away from the revalidation while true reason is not interest in updating the knowledge. Some grade medical officers were critical of the lack of interest in developing juniors by consultants and welcomed CPD points for conducting CPD activities for consultants.

MSF, annual appraisals and review of complaints were accepted as useful tools in revalidation of doctors. However, their approval was significantly less in intensity. In addition, the majority expect them to increase the resistance by various groups including doctors' union. Respondents suggested incorporating these tools gradually after successfully implanting CPD based revalidation. One of the consistent recommendations came from the participant was to start new revalidation process with newly recruiting doctors. They expressed the opinion that such approach could simplify legal barriers and lessen the possible resistance. However, some argue that it will not include most needed doctors at the beginning.

Most importantly, all the participants except one consultant and one university academic approved linking proposed revalidation with medical registration at the beginning. Most believe that Sri Lanka needs to wait until the proper system is established before cancelling or withholding registration. A similar response was evident in linking proposed revalidation to annual increment system. Offering a financial incentive for revalidation was welcomed by all the participants but some expressed concern over the probability of up taking of new system based on incentive and rather recommend some punishment or incentive coupled with punishment.

There was a different opinion on leader institution of revalidation. Most participants suggested that committee composed of more than one organisation should take the lead role in the new process. Consultants wanted more power to the royal colleges. The other participants were of the opinion that the MOH should take the lead role as the ministry have more financial resources. Research participants did not expect any problems of provincial management of some hospital but believed provincial authorities should put more emphasis on CPD of peripheral doctors.

Only some participants expressed an opinion on the cost effectiveness of a revalidation program in Sri Lankan context. They believed CPD based program would be cost effective but did not believe that MSF would be a cost-effective tool in the present environment. The majority expect resistance from GMOA but was in the opinion that the resistance could negate if it was coupled with an incentive like revalidation allowance.

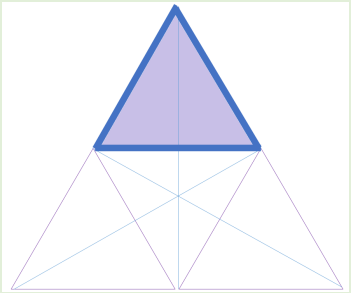
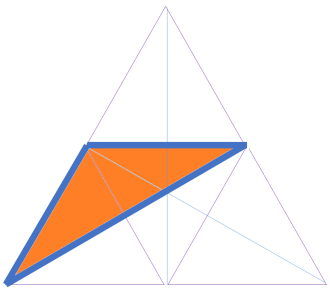
All the tools were identified to have a positive outcome on health care quality and safety by the participants. However, the majority of the participants except interviewees representing the public believed patient involvement should be less at the beginning. However, all the participants acknowledged the importance of patient voice in improving healthcare quality and revalidation of doctors.

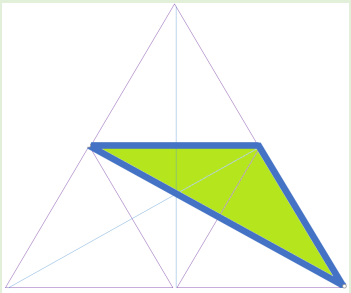
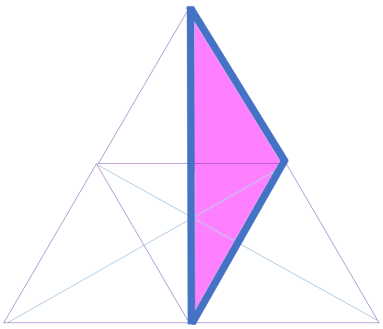
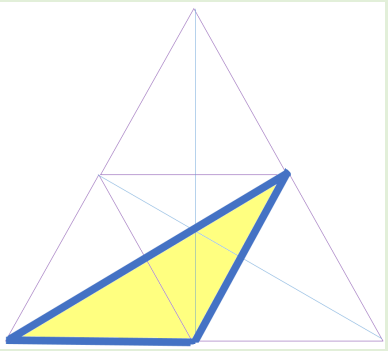
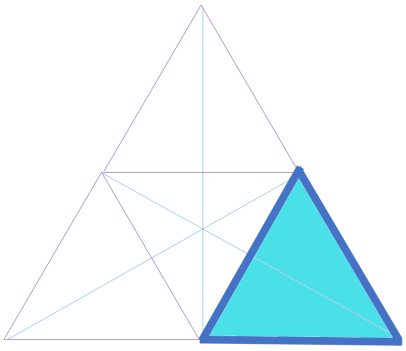
The results of framework analysis are discussed in detail in next section of this chapter.

5.4 Sub-Triangles of Activity Theory

The objective of this study looked at the effect of introducing revalidation process for Sri Lankan doctors. In our activity theory, triangle object corner was the revalidation process. Here I have used all possible interaction that links objective corner or point. Figure 5-1 summarised the codes relevant to and each component the activity triangle and here I have taken away sub-triangle to identify contradiction and solutions as emerged from the framework analysis. Table 5-3 shows details of sub-triangles and contradiction/questions belonging to each sub-triangle.

Table 5-3: Explaning subtraingels along with questions & contradictions

Sub-triangle	Questions and contradiction
Subject-Tool-Object 	How will each category of doctors have affected and responded by different revalidation tools? What minimum criteria should we placed for different category of doctors How will different category of doctors respond to financial incentives for revalidation? Which tools will have direct effect on patient safety and healthcare quality
Subject- Rules- Object 	Effect on medical registration regulation How will nature of employment have affected by revalidation What effects will have linking annual increments to revalidation process How will private sector rules affect common revalidation process

Subject -Division of Labour-Object 	How will administrative hierarchy effect on revalidation process? What should be the composition of revalidation council?
Community – Tools – Object 	How should be the public involvement in different revalidation tools? How will inter-group conflicts affect revalidation? What infrastructure facilities require implementing revalidation tools?
Community – Rules – Object 	How will public / other staff react to amendments to medical registration
Community – Division of Labour – Object 	How much cost would involve in revalidation process and who will bear the ultimate cost? How intergroup conflicts effect on revalidation Council composition?
This table shows the sub-triangles of activity and questions/contradictions used in analyzing qualitative data.	

5.5 Contradiction in Activity Theory

In this part of the thesis, I have discussed overall impression of the qualitative stage followed by answering the questions on each activity theory sub-triangles.

5.5.1 General Impression

The prototype was presented to everyone as it was expected to be very helpful in having meaningful discussion and provided the basis for the discussion. From the focused group discussion, I had with different stakeholders, it was evident that some of the participants did not have much idea on revalidation process until the prototype was presented to them. However, the consultant group focus group discussion stood out from the rest. As the moderator, I did not have to ask many question and discussion flows in a natural manner within the scope of the research. All the participants of the consultants' group had experience in either Australia or The United Kingdom as a part of their postgraduate training.

However, some of the participants had the initial impression that the revalidation is a type of exit exam. It was evident from the question ask by one of the respondents from the doctors group asked

"Is that an exam like thing for doctors?"

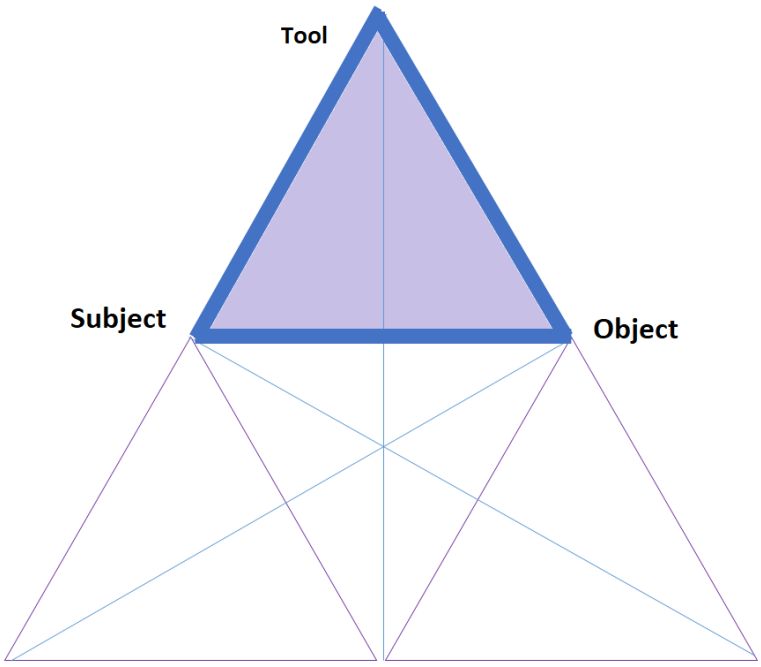
Even though other participants did not ask the question, it was evident at times that they had the impression like that. This is very important as we may need general awareness program on revalidation before implementing a process as there can be a lot of misleading concept on revalidation process among medical doctors. One of the participants from the grade medical officer group acknowledges the impression of doctors and replied

“well, certainly there will be a pressure. People will get scared and most will think that it is like another final year exam. So, most will oppose unless they are aware of the reality and benefits of revalidation.”

In addition, in-depth interviews with SLMA member and university lectures was also shown a good understanding of the revalidation process from the beginning. All 26 participants accepted the need for revalidation but have shown sort of fear on revalidation.

5.5.2 Subject-Tool-Object Triangle

Figure 5-2: Subject-Tool-Object Triangle



Subject – Tool – Object trainable represents the original activity theory triangle and there were few questions needed exploration and stated below.

How will each category of doctors have affected and responded by different revalidation tools?

What minimum criteria should we place for different category of doctors?

How will different category of doctors respond to financial incentives for revalidation?

Which tools will have a direct effect on patient safety and healthcare quality?

All the participants of the qualitative stage agreed the need for revalidation and all of them expressed the opinion that revalidation must be primarily based on CPD. Most of the participants acknowledged the importance of CPD as the main component of revalidation.

"Doctors are professional. I think proper CPD program should be there. Otherwise, we are lagging behind other countries and other professionals. Not only on knowledge but also with skills. We need to have updated doctors to far with other countries. So, I think CPD or CME is an essential thing."

Another thing highlighted was the unavailability of a regulated and coordinated CPD program in the country. There was mixed opinion on making mandatory CPD process but many of them believed CPD process should be mandatory. This was clear on the framework analysis. The participants expressed the opinion that CPD will be helpful in improving the quality of patient care which is the major expected outcome of the revalidation process.

"Doctors are professional and competent adults. They need to be updated and it has to be regulated. Otherwise, patient care would be in danger. The good doctor is always going to be an asset to the patients and patient care would ultimately improve. By making a mandatory CPD, we can definitely improve the quality of doctors. So, I think we should make CPD mandatory."

Mandatory CPD was regarded as the basic requirement for the establishing revalidation process for the country. One of the initial thing needed is to be established a CPD process for the country under the regulation of a recognised body. There were different opinions on who should take the lead role in the CPD regulatory body. Some argued that it must be professional colleges as they have the technical competencies required, while some other argue that it must be the SLMC as the competent authority for the medical registration. The other argument was a ministry to take the leader role in CPD regulatory body. However, one of the participants suggested establishing a national body for regulation of CPD and revalidation within ministry hierarchy as the ministry can provide necessary resources and coordination for the process.

" …. ministry should establish a national CPD council and provide resources for them. The can get the support from SLMC/ SLMA and professional colleges. They have resources, they have money and they can do it."

Many participants argued that a number of CPD points should not be established at the beginning, but rather a minimum criterion should be in place. One of the participants stated

"….. Having 200 hours of CPD activity. OK, maybe that is possible. But take 10 case presentation. Let think about a periphery doctor. To whom he is going to present 10 cases. We can put a system for them. So we need to put a system ….."

The other thing was it was recommended a gradual increase in CPD requirements to allow time for proper CPD process to begin. It was suggested to have achievable level of CPD requirements as quoted below

“In my opinion, these minimum criteria should be easily achievable then we will not have such problem”

Contrary to suggestion on the prototype in the revalidation prototype, participants argue that different CPD framework for different grades of doctors. It was suggested to offer higher CPD points for consultants who were conducting CPD programs. Participants expressed the opinion that it would boost development of CPD process in Sri Lanka and fair distribution can be expected as consultants working in every part of the country. He suggested to include number of CPD programs conducted by consultant in assessing them

“…..Most of the time they conduct lectures or training programs which are CPD programs and even they can claim CPD points. Even SHO’s in those hospitals can attend and claim CPD points ….”

This was further supported by others, especially from consultant group.

“ …… We cannot do a lecture without updating from the knowledge we gathered a few years back ……..”

In my opinion, this is a sensible approach as Sri Lankan health system requires proper CPD system to be developed to proceed with revalidation and quality improvement activities. So, allowing CPD points for consultants who are doing lectures will help in the spread of CPD process in Sri Lanka.

Most participants believe that there are there is an unequal opportunity for distinct categories of doctors. Especially doctors who are working in the periphery. Some of the participants regarded this as a major barrier for implementing mandatory

CPD process/ revalidation process. However, one of the suggestions made was to have different CPD point requirement for doctors working in different settings and districts. A similar process is in place for Advanced Level examination in Sri Lanka.

"…. Since opportunities are not the same, can't we have district quota system like in AL's for CPD. I think we can specify number CPD hours/ training programs differently for different hospital categories. More for teaching hospital workers, low for peripheral doctors….."

In my opinion having a district quota like a system will answer the question on unequal availability of CPD

Interestingly, few participants suggested gender based inequality of opportunities for CPD activities. These activities are not directly related to the profession it self but related to house hold tasks culturally assigned for the females. One of the participants in the female group highlighted the issues and stated

"Yes, we need to consider all these things even family commitments. Some of the female doctors may not be able to complete an appraisal for example during maternity leave."

However, while accepting the extra burden on female doctors, due to family matters, one of the paramedical group participants responded.

"Particularly in areas like these majority of doctors want to look after their kids and have a family life. Mostly the female doctors are trying to look after family matters. This is fair by them but is not fair for patients."

Interestingly, the paramedical herself was a female. This was something that I have not considered in the initial prototype development but included in the quantitative tool to get the further opinion on this and will be discussed in detail in later chapters.

MSF was another tool that was suggested in the prototype. Almost all the participants accepted MSF as an effective means of assessing doctors' performance, especially on non-medical aspects. I consultant responded as

" I think that is sensible. There should be a process like that. Otherwise, you know, the medical profession is a teamwork. A single person can't do everything and they have to get support from paramedics and nurse and everyone. So, assessing from those points of views are also important."

One of the other argument was hierarchical nature of health system and its effect on MSF. Some participants, especially consultant group and believe that MSF will adversely affect on them. One of the reasons they stated was due to unavailability of a proper system, the consultants and doctors should force other people to get things done. One consultant group participant expressed this argument as

" But the issue is, in our hospital system, most of the things are done by the force of the superior person, I mean consultant. Consultant takes charge and forces other people to do things. Or else they will not do the job properly. And most of the time junior staff are not happy with the consultant because he is either blaming or using his powers to get things done"

However, this was contradicted by some others and regarded blaming or using force as a sign of weakness of that person.

“I think there is a problem of leadership. If you are a good leader you don’t blame others for getting things done. There are other ways.”

In my opinion, most of the doctors and consultants are promoting hierarchy as they are getting benefits from maintaining the hierarchical nature. Even though this was not directly spelt it was evident by some of the arguments put forward by the consultants and doctors. For example, one participant said

“In Sri Lanka, the medical consultant is unique as we have the administrative burden as well as the clinical burden. We are not getting any benefit from those two areas. As he said when we are assessed that thing should be taken into consideration. From an administrative point of view, we might be assessed in a sort of a negative way depending on the particular clinical scenario. So, I feel that categories that when you are assessing administrative grade people, they will be assessed only on administrative capability rather than another aspect.”

Another consultant reported on MSF and assessment by other categories

“ OK, we will let minor staff person assess and give feedback on a consultant. But the weight for such assessment must be low. I mean you can’t give it the same weight as the assessment by another consultant. Definitely, that has to be considered.”

In my interpretation, the latter comment shows some disrespect and hierarchical thinking of, which is possibly frequent among, Sri Lankan doctors. However other categories like paramedics and patients welcomed MSF. One para medical participant stated

Commented as

“I think it is important and also important they know how they are perceived by others. That will help them to reflect on their actions and correct themselves.”

However, some paramedics expressed practicality of MSF at present setting as most of the clinics and wards are overcrowded as expressed following opinion on MSF.

“That is very good. But we need to think about the doctor: patient ratio. In our clinic, there are about 120- 130 patients a day and only 2 doctors are there. One need to see more than 50 patients and difficult for them to manage. They will have about 3 minutes for patient and SLIT lamp takes about 2 minutes. I know some patients are not happy. So, when we are collecting feedback we have to think about these aspects as well, otherwise, it is unfair.”

A similar reaction was expressed regarding annual appraisal. Most of the participants reported present system as ineffective in appraising doctors job. They suggested to change the system but expressed the opinion that health system may not be ready for series of changes.

“Annual Appraisal truly is useless for doctors. It is just filling with some forms and nothing to do with our duties”

One important thing that came out from the public representative and pointed out that appraisal system needs to be very objective and participant reported as follows

“It is good but we need proper criteria for that first. We want to decide how to measure on each criterion and standards need to be set. I think we need a formal discussion on that.”

As most participants pointed our appraisal did not have core criteria of an effective appraisal system, thus authority should engage in a formal dialogue with stakeholder to review the appraisal system as resources spending on present system is a waste.

The financial incentive for CPD and revalidation was welcomed by all the participants.

"It is good but we need proper criteria for that first. We want to decide how to measure on each criterion and standards need to be set. I think we need a formal discussion on that."

However, there was some raised concern about the effectiveness of the system comparing it with the research allowance. However, critics of financial allowance were not totally against the incentive. They wanted allowance coupled with something that forces doctors to participate.

"Incentive will not guarantee the participation or acceptance. The penalty will be more compelling and people don't like for being penalised. For example, think about research allowance. After many years only small percentage of doctors are applying for research allowance"

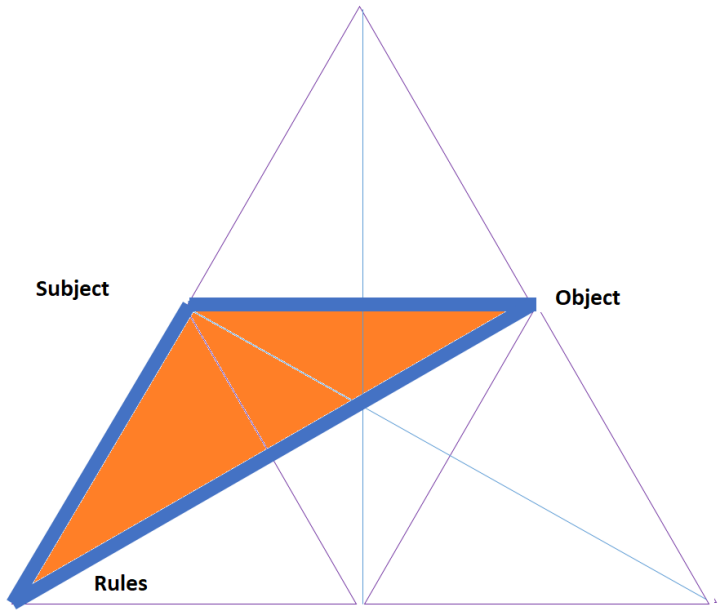
All the participants accepted that all revalidation tools will have a positive impact on patient safety. Two participants of the study directly commented that revalidation will improve patient safety.

"….revalidation is one thing that we can do to improve patient safety…"

“Our first priority is patient safety. If someone is not fit to revalidate it means they are not safe doctors”

5.5.3 Subject- Rules- Object Triangle

Figure 5-3: Subject- Rules- Object Triangle



I have formulated some important points from Subject- Rules- Object Triangle and explored here. The points were

- Contradictions on medical registration regulation
- Contradictions on how will nature of employment be affected by revalidation
- Contradictions on what effects will have linking annual increments to revalidation process
- Contradictions on how will private sector rules affect common revalidation process?

All the countries in the world revalidation are linked directly to the maintenance of medical registration and at times on license to practice. The intention of revalidation is also to ensure proper standards of doctors to ensure safety. Therefore, revalidation was regarded as a process which linked to medical registration and keeping a license to practice under scrutiny. The current process at SLMC is to renew the license every 5 years and there is no formal requirement for renewal of licensure. Research participant viewed this as a weakness of present system and one responded as follows.

"now SLMC want us to renew the license every 5 years. I know we do not have to show anything to SLMC to renew. We can use this renewal process already in place for revalidation. We can't probably erase the name but we have to put some condition for registration otherwise and they will not do people will not take it seriously"

As a fundamental, participants accepted that revalidations in Sri Lanka should influence medical registration. Some of the comments they made were

"…but ultimately, we need revalidation to link with registration."

"Revalidation means checking whether doctors are good enough, so if we are not going to do anything with the registration, what is the point of having it. ….. What I suggest is we can start as an optional program and make it compulsory after some time. Then we can counteract the fear and resistance."

However, most participants suggested that the cancellation or even withholding medical registration should not be implemented at the beginning. There were many arguments or reasons stipulated for this. One respondent argued that fundamental intention of revalidation should not be to effect the registration as commented as

“the main target should be continuous professional development and not cancel registration or put someone in trouble”

However, there was no clear answer on how to make sure CPD is adequate and how we can make sure doctors are safe to practice. The others argue that linking to registration is helpful but should be delayed. One of the commonest reason stipulate was the unavailability of a proper system for CPD. They further argue that it is unfair to cancel the registration when there are barriers for doctors to engage in CPD and other revalidation related activities. The most important of them was the unavailability of proper CPD process in Sri Lanka.

“I think it is too early to touch the medical registration. The first priority should be to implement a good acceptable CPD program. Once good CPD system is there, yes, then you can link it to SLMC registration”

I think this is reasonable up to some degree. However, the problem with linking revalidation to medical registration, there will be low uptake by the doctors. Also, I personally believe that mandatory process will expedite the development process of streamlined CPD programs. I believe that once the demand is created, there will be an organisation to provide the CPD for the market. One of the university academics suggested to set minimum criteria at an achievable level and make it compulsory from the beginning and he replied,

“… minimum criteria should be easily achievable then we will not have such problem. Once the revalidation is based on CME or CPD, mostly you don’t need to take away someone’s job or cancel the registration”

As mentioned by most of the respondent, delayed linking of the new system to medical registration was based on the fear of resistance. However, they have provided some proposals during the discussion and I think some of them are very practical. For example, one of the responded stated

"Or else, we can start with all new doctors who are joining the ministry. There will be less resistance from them and also we can change the job list or whatever to suit this new revalidation."

Similar voices were heard from many of the participants and one replied

"At least we can start from new post-interns. We can put the regulation for them and then there will be nobody to oppose it. So, by that, we can gradually introduce it. It may take maybe 20-25 years. So that we can have very good, updated competent professionals."

I think it is sensible to start with new people as It will reduce a lot of tension within the system. 20-25 years for full implementation will not be a long period when we compared it with the system in The United Kingdom. It has taken nearly 5 decades of the present system to develop. Also, there is a high probability of existing doctors embracing new revalidation if new revalidation perceived as good by the public and professionals. I think financial incentive will be also helpful for increase uptake among existing doctors. The other positive aspect was even the union representative, culprits to be major threat to new system, stated as follows

"Well, that could be one strategy ministry could adopt. Otherwise, there will be lot of resistance"

However, some raised concern about social justice and fairness of implementing revalidation only to new recruits. One of the consultants raised the voice against it and stated

“But, it is going to be a violation of human rights. The system should be fair and everybody should equally be treated. I mean they will file lawsuits against it.”

However, it was soon negated by few from the same discussion and one responded

“No. In that case, we are already violating human rights of patients without introducing revalidation.”

Some para medical group respondent and the public have shown sympathy towards the doctors and commented as below.

“I too think it is unfair to cancel the registration. Because we know how hard to be a doctor and they have spent so much time studying.”

I think this has shown how cultural aspect could influence on the revalidation process and if there is going to be resistance from doctors there can be support for them from the public and even from other staff categories.

As explained in the introduction chapter, Sri Lankan medical doctors are employed as permanent full-time employees of government service. They are primarily governed by establishment code for government servants and medical ordinance. Medical registration is compulsory for prescribing and treating

patients and medical registration is implemented by SLMC, statutory body under the MOH. The proposed revalidation process directly confronts with existing regulations and responded predicted resistance and legal issues around this. One of the study participants from doctors group commented as follows

"We are permanent employees and cannot terminate the job just because we failed at revalidation."

Further another participant from consultant group cited

"I think we need lot amendments to medical service minute, e-code and may need Parliament approval for changing existing legal framework. I think a lot there will be legal challenges if we going to implement without proper approvals. However, as discussed it may be easy to implement for the new doctors."

So, revalidation process should come from the ministry level as should be started as a policy paper prepared by the MOH as suggested by the participant from the public group who is a Sri Lanka Administrative Service Officer. She commented

"I think health ministry should bring a good policy paper. Once the policy paper is there it is easy to proceed and things will get done gradually. First thing is to have good discussion and to bring a policy paper."

Similarly, linking revalidation to annual increment received mixed responses from the participants. Most striking feature of the discussion was almost everyone accepted that present appraisal which is linked to annual increment was not effective for medical officers. However, people were reluctant on linking revalidation citing that inadequate opportunity of participation in revalidation

related activities. However, they were more positive about linking revalidation to increment than to medical registration.

"I think we need to introduce a warning system like level 1, level 2, level3. We should not stop increment straightway. In case, if they are ignoring we can think about stopping increment or sort of a penalty."

The other thing highlighted was that linking revalidation to increment process can bring more people as that is not only about money and it is linked to ministry seniority.

"Increment is not just about money. It's about seniority and other things as well. You will not get grade promotion and also you will be in a disadvantage as your seniority will get affected and it affects all things like transfers even quarters."

One of the consultant group participants pointed out that failing to complete efficiency bar examination resulting in losing increment and from his point of view the CPD/ revalidation is more important for a doctor than passing efficiency bar examination.

"Yes. That is what we wanted. Then there is a compulsion. You will lose your seniority if you do not pass your E-bar. But nobody is complaining about E-bar. Updating knowledge is more important than E-bar for a doctor. So, why not link it."

However, some considered it is too harsh to stop increment straight way and suggested a warning system and ultimately stop the increment.

“I think we need to introduce a warning system like level 1, level 2, level3. We should not stop increment straightway. In case, if they are ignoring we can think about stopping increment or sort of a penalty.”

However, there is likely union pressure on linking increment to revalidation process which was clear from the comment from the union representative.

“As you know the increment is linked to seniority and members will not be happy to lose anything. As a trade union, we don’t like additional barriers or problems…”

However, in my interpretation, unions officials were having a narrow vision of things compared to the membership. Most research participants were more positive on revalidation when compared to the union representative. The union representative was more caution in answering the question and was appeared giving some answers against his will which were clear from some of the phrases he used such as

“You know, I am not against revalidation, but as a union representative I cannot give straight answers at times.”

The private sector in Sri Lanka mainly thriving from part-time doctors from government service although full-time doctors are gradually increasing in number. All the doctors in private sector also need registration with SLMC and their affairs are monitored by PHRC of the MOH. Revalidation process for the private need to consider these aspects. Many of the research participants did not believe that there is a need for much changes to revalidation process to include the private sector. One of the medical administrator group representatives responded as follows

"Yes. They are also part of our health system. The other system is we need to have uniformity of revalidation and both private and government sector should be uniformly assessed."

Some participants argued that revalidation process should adopt certain things like appraisal system from the private sector as they are more effective and more customer oriented than the Sri Lankan Government health sector. He also pointed out more power of service user and his right to choose the provider.

"there is more efficient performance appraisal system in private sector because the private sector is, I would say more customer oriented and people have the choice to select good doctors."

Few participants suggested that we should start the proposed revalidation process with private sector medical doctors. Reasons behind this were they expect less resistance from doctors in the full-time private sector.

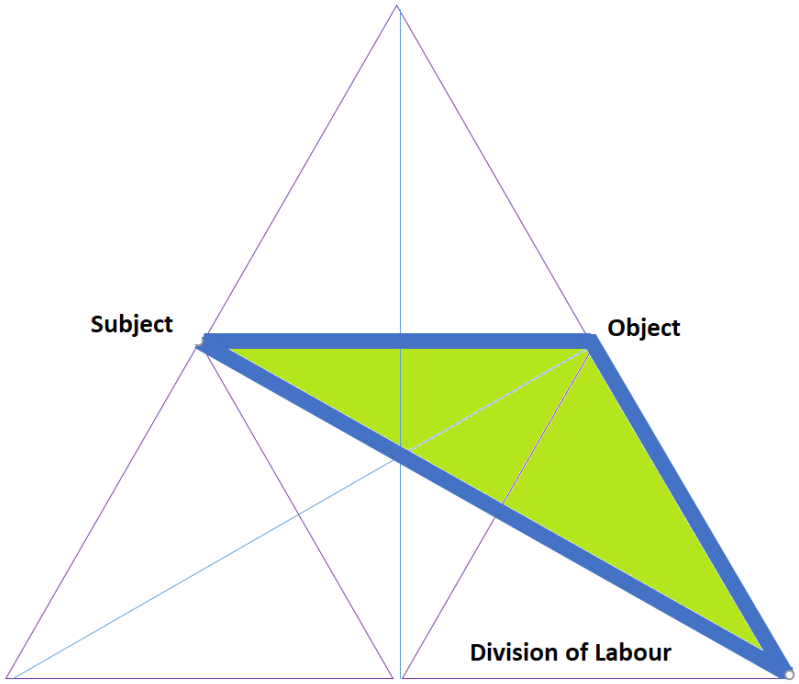
"I think there will be less resistance from private sector employees as they do not have much say."

In addition, the smaller number will help to monitor the progress and problems of the new system. However, in my view, it may be better to start with new recruits rather than at the private sector as there are multiple players and partners which can make implementing a new system harder. The participants expect all the revalidation tools to improve patient safety. Participants of the study believe that clinical knowledge and skill will have the most effect on improving patient safety.

"… clinical knowledge and skill are more important for a consultant and directly affect patient care and safety. And I feel, more weight should be placed on assessing clinical aspects…"

5.5.4 Subject -Division of Labour-Object Triangle

Figure 5-4: Subject -Division of Labour-Object Triangle



There were two contradictions identified on Object -Division of Labour-Object Triangle and they were

Contradictions on how will administrative hierarchy effect on revalidation process?

Contradictions on what should be the composition of revalidation council?

Sri Lanka still has longitudinal and hierarchical management at most government institutions including the MOH. The status was linked to the position they held within the MOH. In my opinion, attempts to maintain hierarchy is one of the reasons for inter-group conflicts in Sri Lankan health system. This was further evident during the focused group discussions and interviews. Consultant group members were not particularly happy to be involved in appraisal by the hospital director or the administrate head. One participant of the consultant group discussion said,

"…. The person should be a peer or more superior to appraise him. I strongly object an administrative person in the ministry apprising a consultant as that person have no knowledge of consultant's duty. So, he should not take the top spot and decide the outcome. There should be a strong well-made guideline for those aspects."

Another consultant from the same group reported

"As a consultant, I believe the peers or superiors should be decided by the College of a particular speciality. Taking on point of view a consultant, I believe that the revalidation should be handled by the relevant college rather than the committee"

However, in administrative structure, hospital consultants are under the hospital director or the medical superintendent. Even at present, appraisals of consultants are signed by the hospital director or the medical superintendent. The consultant group members emphasised the significant role of royal colleges, which are self-governed by consultants of the speciality. On discussions with medical administrators group contradict too much involvement of colleges in administration but rather they want technical guidance from the royal colleges. One of the admirative group participants commented

"I think health authority should have the responsibility. We can get their guidance, I mean professional colleges or some other expert organisations or private organisation…..……. It is the health authorities' responsibility. If not the thing will not be materialised. Authority is the authority and ministry should take the responsibility.

All the research participants were in agreement on the need for a committee for revalidation rather than an individual. However, some argued that the

revalidation council should bear the responsibility of CPD and therefore to establish national CPD and revalidation council. The latter is expected to reduce the adverse opinion on the council. Some of the relevant comments made by them were

"I think we need something like national CPD council or some regulatory body. We can accredit all CPD activities and monitor all clinical programs."

"As I mentioned earlier ministry should establish a national CPD council and provide resources for them. They can get the support from SLMC/ SLMA and professional colleges. They have resources, they have money and they can do it."

"…it may be better done by combination of different people like Ministry, SLMC and other institutions like royal colleges, clinical societies and even GMOA."

However, the contradiction was evident when deciding on the composition of the national council. Consultant group expressed more representation from the royal colleges while other groups did not want that. However, the other groups were willing on getting more technical evidence.

Some argued that CPD and revalidation council can prepare the framework for revalidation and accredited organisations like royal colleges and clinical societies to design programs within their speciality. One of the consultants commented

"We can create a framework and ask professional colleges to design specific systems. Then doctors can select one of the professional colleges and follow the program. But there should be more similarities than differences in each program."

Another consultant argued that the every CPD program to be accredited by Royal College of given speciality.

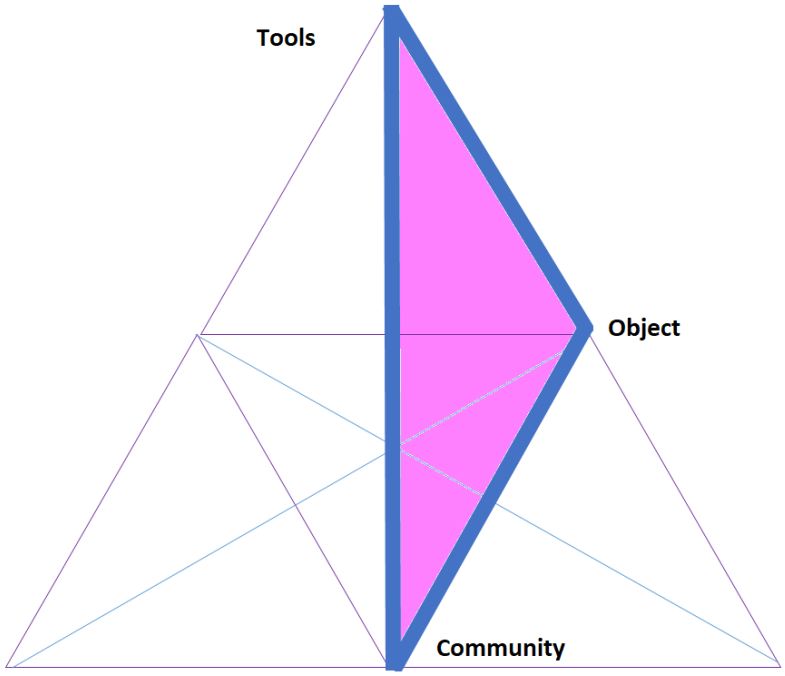
“They can support the CPD council and we should give them a place in CPD council. They can have sub-committees for each speciality to approve CPD programs.”

However contrary to the initial prototype, a participant expressed limited role in universities. They believed university staff belonging to a different department and was under the different administrative structure. In addition, according to participants’ opinion health ministry is having adequate resources without the participation of university academics. One of the university academics also agreed with the limited role of universities in revalidation process

“I am a university lecturer but involve in our college. In my opinion, I think universities or medical colleges have a limited role due to administrative structure and also that is not much needed. But they can be involved as they have some facilities. They can organise workshops and things like that. I think they have a supplementary role”

5.5.5 Community – Tools – Object Triangle

Figure 5-5: Community – Tools – Object Triangle



There were two contradictions identified on Community -Tools-Object Triangle and they were

contradiction on how should be the public involvement in different revalidation tools

contradiction on how will inter-group conflicts affect revalidation

In the UK, revalidation was driven by public pressure. However, in Sri Lanka revalidation is suggested as a proactive process to improve the quality of healthcare. However, as discussed earlier, medical professionals were in favour of establishing a revalidation process in Sri Lanka. Even though, medical professional accepted the need for a patient voice in revalidation process they were reluctant patient involvement in some tools especially MSF. One of the consultant group participants commented

"….. for our patients, you will have to sit with them and tell word by word what we expect from them in filling the forms and maybe ask them to write what we want them to write rather than what they want to write. In the western hospital system, you will have forms in the hospital and they will fill it and put in a box and go. They are aware of these but our patients it is difficult. You know what happens when we give a prescription to our patients. we have to tell him where to go, how to collect and all kind of things. They will not understand what to fill"

Lack of understanding about medical conditions and low patient literacy on medical conditions were identified as barriers to patient involvement. Both consultants and other participants agreed on this argument. As one of the doctors commented critically on patients' knowledge

"Some patients even don't know what and why we are treating them…."

The paramedical group expressed a mixed opinion on patient involvement in revalidation process. Some participants reported it as a good move and one paramedic commented on benefits of such move

"It will give the patient a chance to raise their voice and concerns and they will be happy as well. On the other hand, doctor will be more caution when treating because they know that they need feedback from patients"

One of the paramedical group member who works in an ophthalmology unit shown the how overcrowding could affect feedback from patient regarding doctors' performance including non-medical competencies

"…. In our clinic, there are about 120- 130 patients a day and only 2 doctors are there. One need to see more than 50 patients and difficult for them to manage.

They will have about 3 minutes for patient and SLIT lamp takes about 2 minutes. I know some patients are not happy. So, when we are collecting feedback we have to think about these aspects as well, otherwise, it is unfair."

In my opinion, I think we need to consider these aspects when considering patient involvement in revalidation process. These will be discussed more in the chapter on discussion and recommendation.

There are frequent inter-group conflicts within the health sector in Sri Lanka. Some of the problems are attributed to the hierarchical nature of management while other due to trade-union conflicts. As respondent reported contradiction, among different healthcare workers, can occur due to several reasons. Communication skills and problems in hierarchy were identified as two common reasons for inter-group conflicts and one of the respondent reported

"I mean doctors should be taught to respect other people. I am also working in the ministry for over 10 years. But new doctors do not respect us. We are also doing something for patient care but some of them talk like that we are not doing anything and just wasting time. We like to help with doctors but the way they talk is not nice and even we get angry"

Doctors and consultant reported unavailability of the system is partly responsible for communication difficulty and conflicts.

"But the issue is, in our hospital system, most of the things are done by the force of the superior person, I mean consultant. Consultant takes charge and forces other people to do things. Or else they will not do the job properly. And most of the time junior staff are not happy with the consultant because he is either blaming or using his powers to get things done. I mean not unfair things, just to get the job done. Sometimes we have to argue with people and blame people.

This is because the system is not running properly. If the system is running properly we do not need such things. But in our system, to get things done you have to argue with others. When you are going for revalidation, …., these 360 appraisals, person who is for the sake of getting things done forcing others will have a disadvantage."

The latter part of the comment signifies how inter-group conflict could affect the proposed revalidation process. The impression on MSF or 360-degree appraisal and conflicts were also different among consultants. One of the administrator group participants argues that forcing or blaming others as a leadership issue.

"...why should we blame other people. Nobody wants to be blamed. There are processes in the system they can use to get things done. If not they always can act according to the rules. They can inform through the channel. I think the problem is with the leadership and we should encourage these people for leadership training. That is why this MSF is important for everyone."

Paramedical group participants wanted their voice to be heard in the revalidation process and expressed the opinion that MSF is important in revalidation. However, they agreed that they should be assessed as well.

"…can raise our concern regarding a doctor or consultant. Then, the management like a director or someone can take actions to correct them. I think they should be given a chance to feedback on us as well. Otherwise, it is unfair."

The required infrastructure for revalidation process was not the major focus of most of the research participants. Facilities were required for CPD as well as other tools such as MSF and appraisals. Some of the additional requirement will

be needed especially in the rural/ peripheral hospital doctors. One of the consultant participants suggested the requirement of infrastructure facility improvement such as transport.

"Yeah. But what about the transportation. Take for example a district like Nuwara Eliya. The main Hospital in Nuwara Eliya is This and see there is a central dispensary called Nildandahinna and is about 80 kilometres from here."

The comment was soon appreciated by another member of the group.

"Not just the distance, it takes 4 hours to travel."

However, many others from the same group contradict the additional requirements infrastructure.

"I think this is an illusion. We are in a telecommunication era and we do have a very good network of roads. If doctors are interested they can come to the main city within 2 hours. I think over 95% can come within one hour. People use this as an excuse for non-participation. Not like in the past we do not have many institutions with only one doctor. If you think about 15000 doctors working in the country only about 500 doctors will have difficulties in participation."

One of the consultant group member comments and suggested easy solution for additional requirement

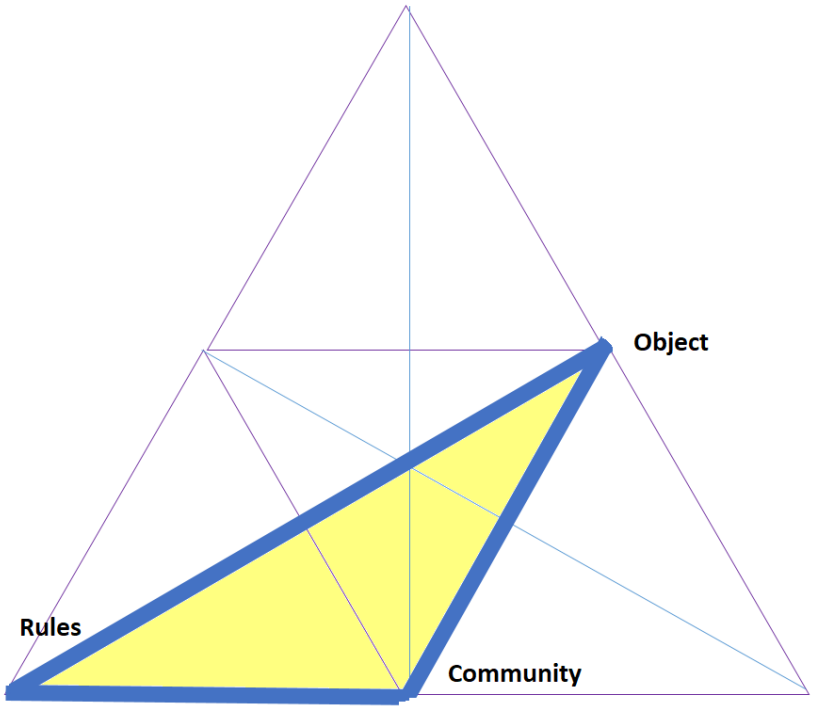
"I think there are some relief medical doctors for each RDHS division to cover for the illness of doctors working at the one-man station. We can just increase the number of them and arrange the cover. They all do not want to come for same

CPD program and all these CPD programs will be few times a year. And what percentage of doctors working as one-man? I think less than 0.1 percent and I am not ignoring them we can give some support to them…"

The additional facilities such as manpower were recognised as another challenge and will be discussed below.

5.5.6 Community – Rules – Object Triangle

Figure 5-6: Community – Rules – Object Triangle



Contradiction on this triangle looked at the different opinions on public and other healthcare group reaction to revalidation process. Public representative looked revalidation processes an opportunity to raise their voice. Both public representatives welcomed process of revalidation and commented

“I do not think there is such system in Sri Lanka. Am I right? I think it is good if such system is there.”

However, they did not want to see doctor losing his job due to the failure of revalidation but question the doctor may not be safe enough to treat them. One participant commented

“It is unfair to dismiss but the problem is it fair to let them treat us if they are bad doctors.”

The other participant wanted more comprehensive rehabilitation program and using their strengths to get a better outcome and commented as follows

“We need to first think which component they are failing. Is it because he is giving wrong medication or not treating people well and like that. We need to consider their weak areas and also identify good areas. We can assign them to a place where they can use their good areas or we can recommend them to have sort of training on weak areas. For example, we can use them in health education or something like that. We need to use his talents on something meaningful rather than dismissing him. I think we need to keep him on government service.”

I have discussed other staff reaction and contradiction in the previous section and therefore will not be discussed here. However, one of the striking suggestion was a request for revalidation allowance for others. I believe that is an opportunity for implementing revalidation on another professional group once a proper system for doctors is commenced. When I asked about what would be the response if another staff categories request for revalidation one of the medical administrator commented

"…. if that happens, that is good. They are asking for revalidation and we can very well give that. It is good."

One of the paramedical group participants cited that there could be unnecessary tension if revalidation allowance is only given to doctors and his comment was

"I think that will create some unnecessary tension among groups. We need to give allowance to all the health care workers."

However, another member of the group contradicted his view and commented

we can start with doctors and then gradually come to other staff as well.

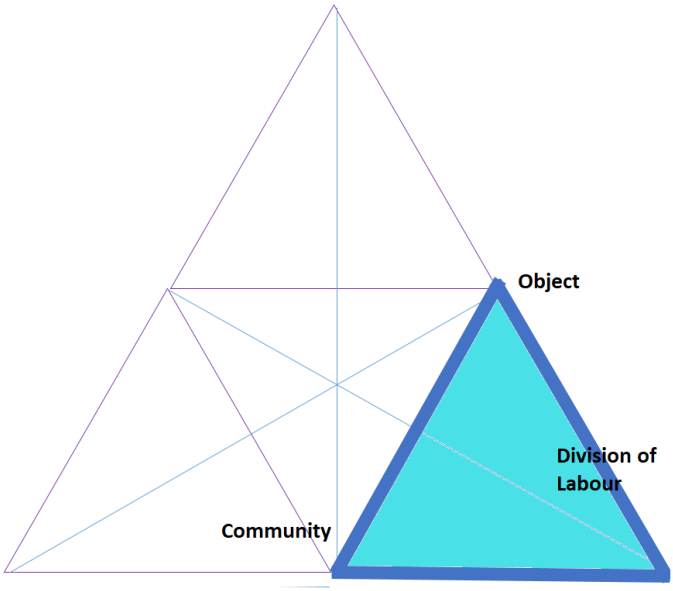
"That is the problem in Sri Lanka, we do not like doctors getting more and the other way as well. We don't have good unity among different groups. These trade unions will spoil things."

The revalidation process of other health care workers was welcomed by most participants. They also predicted natural transmission of knowledge across the other health workers. One of the participants in the paramedical group commented

"Another thing is when doctors are up to date even we will get motivated to update our knowledge. And even from financial and trade union view, we would like to request for revalidation allowance or study allowance."

5.5.7 Community – Division of Labour – Object Triangle

Figure 5-7: Community – Division of Labour – Object Triangle



This triangle looked at the contradiction on the cost of the revalidation process and cost effectiveness of each tool used in the revalidation process within the Sri Lankan context. One of the main argument against the revalidation was the cost associated with the process is too much for a South Asian country like Sri Lanka. However, this was rejected by participants of the study.

"I think he made a good point. I mean I am attending these maternal conferences and our health is far better than other South Asian countries. But for at least last 10 years we are not improving much. So, revalidation may be helpful to that. I mean we can improve the quality of our system further."

All participants of the administrative group appreciated that the revalidation process is cost-effective and worth spending money on it. Two of the comments on the cost was as follows

“We should not talk about only the cost when it comes to health. We have to think about cost-benefit. When you think in that term, I think benefits overweight the costs.”

“In my opinion, as we all know, health is a human resource intensive sector. The quality of human resource will have a huge impact on overall quality of service. This is a sort of quality improvement and monitoring system for health workforce. So, the cost can be justified. We are spending so much money on unnecessary things and it is worth spending money on this process”

The next contradiction was, who should take the financial burden of revalidation process. It was evident from the participants’ responses that the doctors will not ready to spend from their pocket for revalidation. As suggested by the participant, the MOH should bear the cost of revalidation process.

“The Health Ministry should take the financial burden, in my view that is a worth taking and benefit will go to the public.”

However, as discussed during the data collection, some participants believe that revalidation process to reduce the overall cost of healthcare at some point.

“That depends on who bears the cost. If the individual doctor is bearing the cost, definitely it will be cost effective. If that is not a burden to the government it will be cost effective. But in reality, the doctor will not be happy to spend on this and then ultimately the government will have to bear the cost. It is very difficult to give a straight answer but I think it will be a cost-effective program. I think this will

result in reduction of the frequency of visits of patients and thereby reducing the number of patients. The ultimate result would be reduced cost to the government."

However, MSF was regarded as not cost effective at present by some of the participants. Especially random selection of patients and staff for feedback was discussed as not effective.

"I mean you can randomly select people and give the feedback forms. We don't know whether they will agree to fill the forms and return them. Think about patients we can't force them to fill a form. So, random selection is a waste of time and money. We may have to give 100 people to get 10 feedbacks."

Concluding remarks

Qualitative analysis of the data using framework analysis and pragmatic summary of contradiction on activity theory triangle had provided the insight into thinking of different stakeholder of revalidation in Sri Lanka. I have used the insight of this chapter to refine the questionnaire used in the quantitative stage of the study. Next chapter is focussing on quantitative stage data analysis.

6 Quantitative Data Analysis

This chapter discusses the findings of the quantitative stage of the study. The study instrument was a self-administered questionnaire in the English language. The questionnaire consists of two parts with first part composed of 8 questions related to socio-demographic details. Part two of the questionnaire composed of 28 questions. The chapter on the methodology described more information on the study instrument and is attached as Appendix 0.

6.1 Socio-demographic Characteristics

The first section of the questionnaire composed of 8 questions related to socio-demographic data and is worth consideration as socio-demographic data is used in the comparison of section 2 responses later in this chapter. There were 331 questionnaires returned by the participants. However, due to issues with partial completion and inadequate responses 14 responses were not included in the assessment. All the quantitative analysis discussed in this chapter included 307 respondents without any missing values. The study group composed of 307 medical doctors ranging from 28 years to 59 years with a mean of 39.0 years (Table 6-1).

Table 6-1: Age Distribution of the Sample

Age Distribution of the Sample	
Mean	39.00 years
Median	37.81 years
Std. Deviation	6.291 years
Minimum	28 years
Maximum	59 years
This table summarizes descriptive statistics on age distribution of the sample and included commonly used measures of central tendency	

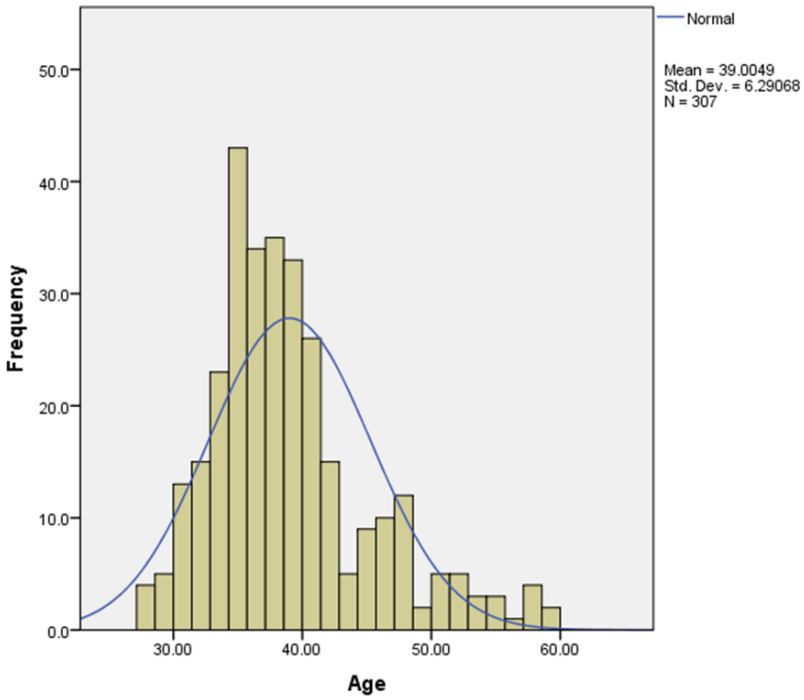
Most of, Many of the study participants belong to the age group of 31 -40 years and comprised 68.4% of the sample.19.2% of doctors belong to the age group of 41 -50 years (Table 6-2). The age distribution was in-line with the that of the study population.

Table 6-2: Distribution according to the Age Group

Age Group	Frequency	Percent
21-30	17	5.5
31-40	210	68.4
41-50	59	19.2
51-60	21	6.8
Total	307	100.0
This table age distribution of the sample according to the age group as statistical analysis requires grouping into age groups.		

The distribution of age has positively skewed with near-normal distribution (Figure 6-1). The age distribution was consistent with the previous studies conducted in the same study population in Sri Lanka (Kavisekara, 2013). Another study conducted in Kandy Hospital had reported similar distribution pattern with regard to the age of the population (Ranasignhe, 2010). Therefore, the sample can be considered to represent the study population and the Sri Lankan medical doctors in general.

Figure 6-1: Age Distribution



The figure show distribution of the sample based on the age of the study participant in a histogram with the normal curve.

There were 39 more males than females in the sample with 134 female and female represents 43.6% of the sample (Table 6-3). Another study conducted by in the same population also yielded comparable sex ratio (Kavisekara, 2013).

Table 6-3: Gender Distribution

	Frequency	Percent
Male	173	56.4
Female	134	43.6
Total	307	100.0

This table shows the gender distribution of the study population in the quantitative stage of the study.

Most of the doctors participated in the study were Sinhalese while majority belonged to the Buddhist religion. The descriptive statistics are summarised in Table 6-4 and Table 6-5. The ethnic and the religious composition is important as they can play a significant role in perception to the continuous professional development and the medical revalidation. This is discussed more in the chapter on the discussion.

Table 6-4: Ethnic Composition of the Sample

Ethnicity	Frequency	Percent
Sinhala	270	87.9
SL Tamil	17	5.5
Indian Tamil	4	1.3
SL Moor	16	5.2
Total	307	100.0
This table shows the ethnic distribution of the study population in the quantitative stage of the study.		

Table 6-5: Religious Composition of the Sample

Religion	Frequency	Percent
Buddhist	261	85.0
Hindu	21	6.8
Islam	16	5.2
Christian	9	2.9
Total	307	100.0
This table shows the distribution by the religion of the study population in the quantitative stage of the study.		

Provincial populations statistics for the central province comparable with the sample distribution. Low representation of Indian Tamils was compensated by Sri Lankan Tamils.

250 out of 307 study participants were married and represented 85.3% while 14.7% of the population were single. The summary of statistics is shown below (Table 6-6).

Table 6-6: Distribution of the Sample by Marital Status

Marital Status	Frequency	Percent
Single	45	14.7
Married	256	83.4
Widowed	5	1.6
Divorced	1	.3
Total	307	100.0
This table shows the distribution of the study population in the quantitative stage of the study by their marital status.		

61 of the medical officers out of 307 had no children while 79, 140 and 25 had 1,2 and 2 children respectively. Only 2 had 4 children. The descriptive statistics are summarised in

Table 6-7.Traditionally in the Sri Lankan culture, females are vested with more household responsibilities after the marriage and the primary responsibility of childcare is also vested to females. Whereas, males were given little responsibility on household works and childcare. Therefore, it is very important to analyse the perception on proposed revalidation and CPD process from the

male and female point of views. This is discussed in detail in the chapter on the discussion.

Table 6-7: Number of Children in the Family

No of Children	Frequency	Percent
0	61	19.9
1	79	25.7
2	140	45.6
3	25	8.1
4	2	.7
Total	307	100.0
This table shows the distribution of the study population in the quantitative stage of the study based on the number of children in their family.		

The service experience as a doctor was ranging from 2 – 32 years with mean experience of 11.51 and SD of 6.5. The service experience was categorised for descriptive and further analysis purpose and the descriptive statistics are summarised in the table below (Table 6-8).

Table 6-8: Service Experience of the Study Participants

	Frequency	Percent
1 – 5 years	30	9.8
– 10 years	137	44.6
11 – 15 years	82	26.7
16 – 20 years	30	9.8

20 -25 years	9	2.9
25 -30 years	12	3.9
30 -35 years	7	2.3
Total	307	100.0
This table shows the distribution of the service experience in the study population in the quantitative stage of the study.		

6.2 Perception on new CPD and Revalidation Process

There was 17 Likert Scale question on assessing perception on newly designed prototype among medical officers. All Likert questions were on the 5-part scale and results are summarised in the table below Table 6-9. Full descriptive statistics are attached in the Appendix.

Table 6-9 : Responses to Likert Scale Question

		Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Sri Lanka need proper CPD process	25.4	45.0	2.6	23.5	3.6
2	CPD can improve safety	24.1	40.1	11.7	20.5	3.6
3	CPD improve patient confidence	17.6	25.4	22.1	30.3	4.6
4	need to establish a national CPD council	22.5	46.9	10.1	16.6	3.9
5	online CPD should be included as a component	32.6	43.3	2.6	19.2	2.3
6	Sri Lanka need revalidation	21.2	36.8	10.1	28.3	3.6
7	should include non-medical aspects	30.3	49.5	15.3	4.2	.7
8	revalidation process should start with CPD only	38.1	40.4	13.4	6.8	1.3
9	revalidation process should include appraisal	23.5	38.8	28.3	8.1	1.3
10	revalidation process should include MSF	17.3	27.0	29.3	23.1	3.3
11	revalidation process should include complaints	19.9	41.4	11.4	22.8	4.6
12	revalidation process will improve patient safety	20.5	39.7	16.0	19.2	4.6
13	revalidation process will improve service quality	14.0	26.7	24.4	30.0	4.9
14	revalidation will improve patient confidence	20.2	39.7	16.6	19.9	3.6
15	revalidation process is cost effectiveness	21.5	24.8	24.4	26.1	3.3

16	revalidation on others	22.8	40.1	10.4	23.1	3.6

This table shows the distribution of the answers to 16 five-part Likert scale questions with relative percentage.

By looking at the questions most of the responses have clearly shown a positive attitude towards revalidation. However, to identify attitude with socio-demographic variation, I have prepared a composite score from 16 Likert questions. The score was converted obtain marks out of 100 for easy comparison. The cores were ranging from 26.56 to 96.88 with a mean score of 64.40. The summary of composed score is shown in Table 6-10.

Table 6-10: Descriptive Statistics of Perception Score

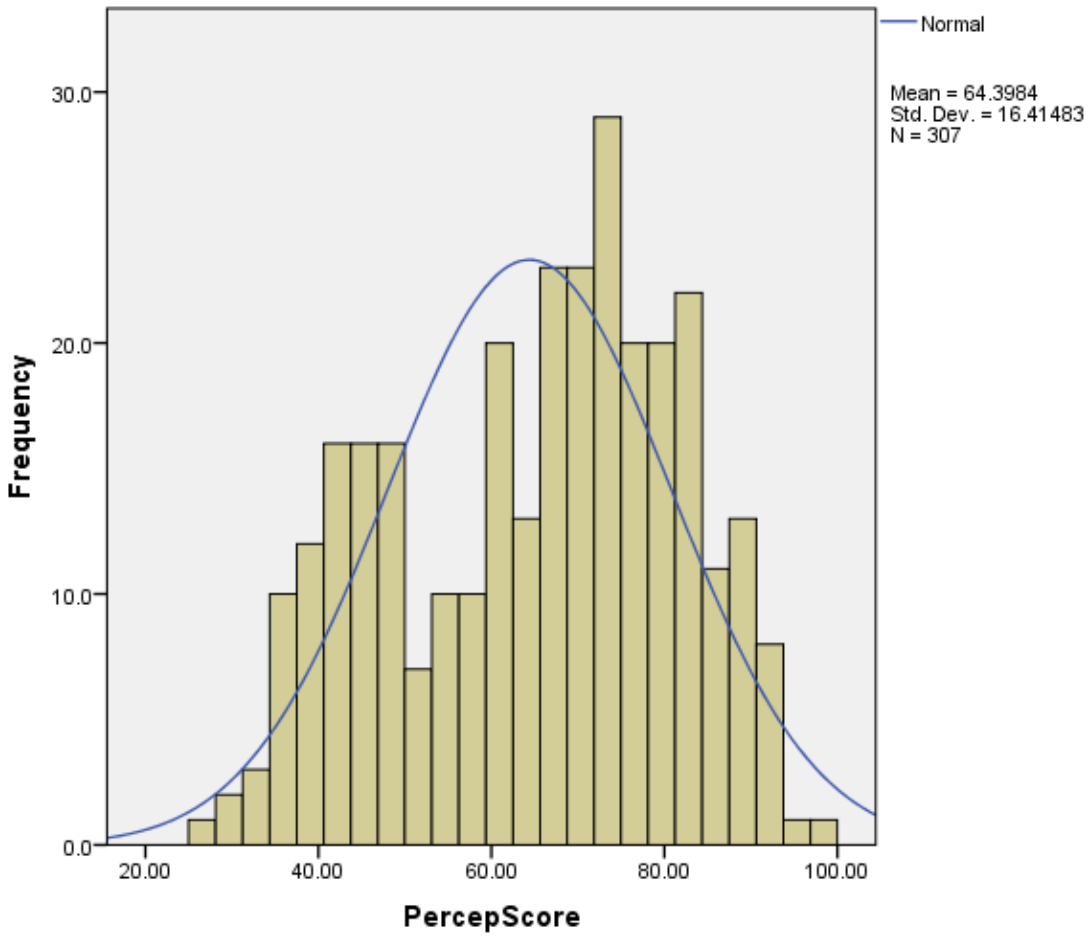
Mean	64.34
Median	67.19
Std. Deviation	16.41
Range	70.31
Minimum	26.56
Maximum	96.88

This table shows the basic statistics of the composite perception score calculated using Likert scale questions

Distribution of the perception score (PercepScore) did not show normal distribution pattern (Figure 6-2). It was a distribution with two peaks and could be most like due to a limited number of people expressing a neutral opinion. In addition, a limited number of questions and nature of Likert scale could have contributed to the shape of the distribution curve. The non-normal distribution

has limited the use of some of the statistics test in the analysis of quantitative data.

Figure 6-2: Distribution of Perception Score



This figure illustrates the distribution of overall perception score of the study participants with normal distribution curve

I have used The Mann-Whitney U test to compare the differences between different independent categories of medical officer groups with the perception score as the latter is not normally distributed. The independent variable used was

- Gender
- Having children or not
- Married vs Other categories

The following assumptions were checked and confirmed to be within the required level for use with the Mann-Whitney U test and included

Assumption #1: dependent variable measured at the ordinal or continuous level

Assumption #2: independent variable consisted of two categorical, independent groups.

Assumption #3: There was no relationship between the observations in each group or between the groups themselves.

Assumption #4: The two variables are not normally distributed but the two distributions have shown similar the similar distribution pattern.

There was no significant difference in perception towards revalidation process based on the gender of the medical doctor (P = 0.772), whether having children or not (P = 0.772) and living with a partner or not (P = 0.411). The statistics are summarised in below tables (Table 6-11, Table 6-12) and full statistical tables are attached as Appendix 0.

Table 6-11: Mann-Whitney U Test Ranks

	Gender		**Have children**		**Living with partner**	
	Male	Female	Yes	No	Yes	No
Number	173	134	246	61	256	51
Mean Rank	155.29	152.33	156.60	143.50	155.86	144.67

Sum of Ranks	26865.50	20412.50	38524.50	8753.50	39900.00	7378.00

Table 6-12: Mann-Whitney U Test Results

Test Statistics			
	Gender	Have children	Living with partner
Mann-Whitney U	11367.50	6862.50	6052.00
Wilcoxon W	20412.50	8753.50	7378.00
Z	-.290	-1.033	-.823
Asymp. Sig. (2-tailed)	0.772	.302	.411
Mann-Whitney U Test statistics showing that there was no significant difference in perception towards revalidation process based on the gender of the medical doctor			

It was clear from the result that there is no need for a change of revalidation process for female doctors overall. I have used Kruskal-Wallis H test to determine if there are statistically significant differences between perception score based on the grade of the doctor. The null hypothesis was “the distribution of perception score was same across different grades of doctors. As the test result shows

significance level below 0.05 (Z = 0.000), the null hypothesis was rejected. The full statistical tables are attached as Appendix 0.

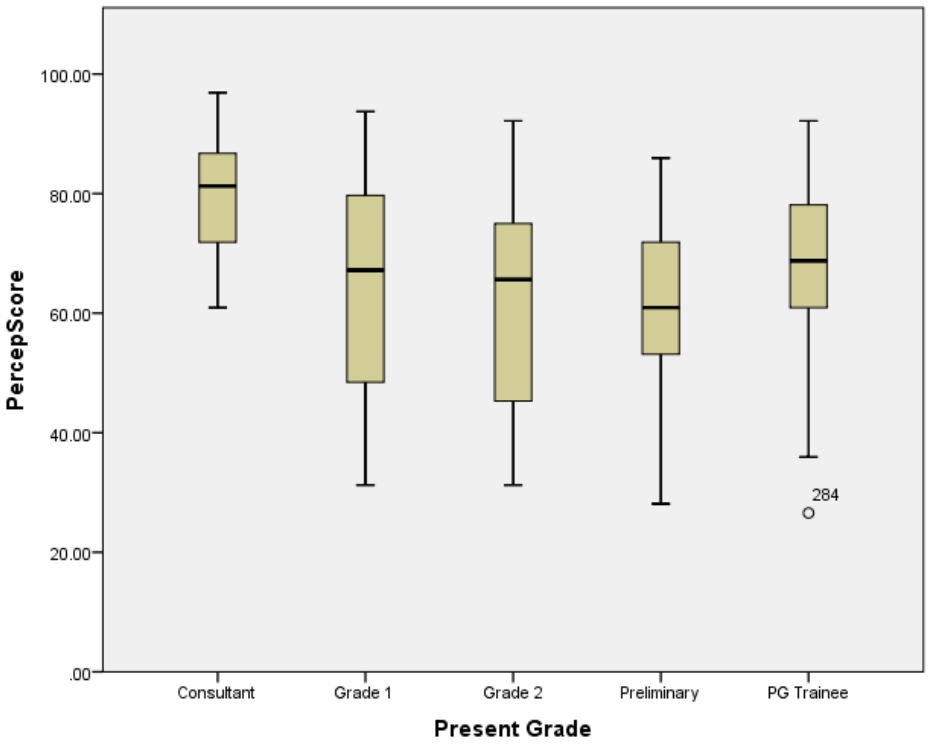
Similarly, I have used The Mann-Whitney U test to compare the differences between the grade of medical officers against the perception score and results is shown below.

Table 6-13: Perception Score Based on Grade of Medical Officer

Present Grade	N	Mean Rank
Consultant	24	236.81
Grade 1	46	152.64
Grade 2	134	142.06
Preliminary	57	130.89
PG Trainee	46	175.57
Total	307	
Mann-Whitney U Test statistics showing that there was no significant difference in perception towards revalidation process based on the category of doctors apart from consultant grade doctors.		

On examination of mean ranks, consultants have shown high perception score above all others (Table 6-13). However, statistical conclusions were not made as the analytical software did not allow further comparison with accepted accuracy. Figure 6-3 shows box-whisker plots for different grades of doctors participated in the study.

Figure 6-3: Perception score among different grades



The figure shows box-whisker plots for perception score on different grades of doctors participated in the study

Since consultants had higher overall perception score, I have conducted series of crosstabs to compare any difference on opinion on individual questions. The summary of test statistics is shown below.

Table 6-14: Comparing Consultants Opinion with Others

Comparing Consultants Opinion with Others			
		Pearson Chi-Square Value	Significance – two sided (p)
1	Sri Lanka need proper CPD process	10.969	0.001
2	CPD can improve safety	14.537	0.000
3	CPD improve patient confidence	25.167	0.000
4	need to establish a national CPD council	11.490	0.001
5	online CPD should be included as a component	8.269	0.004
6	Sri Lanka need revalidation	9.312	0.002
7	should include non-medical aspects	0.007	0.935
8	revalidation process should start with CPD only	0.007	0.934
9	revalidation process should include appraisal	1.810	0.178
10	revalidation process should include MSF	1.027	0.311
11	revalidation process should include complaints	1.010	0.315
12	revalidation process will improve patient safety	10.723	0.001
13	revalidation process will improve service quality	0.282	0.595
14	revalidation will improve patient confidence	8.238	0.004
15	revalidation process is cost effectiveness	1.528	0.216
16	revalidation on others	6.768	0.009
This table shows the difference of opinion on revalidation between consultant grade doctors and others. The bold lines represent observed significant difference at 95%.			

It was clear that the consultants had a significantly different opinion on CPD process compared to other categories of doctors and they were strongly in favour of recommending a CPD based revalidation process. The results of the quantitative stage were complementing the opinions of the qualitative FGD among consultants.

Similarly, Kruskal-Wallis H test to determine service experience relationship with perception score revealed that there is a significant difference among different service experience category of doctors (Z = 0.005). However, due to the complexity of the statistical tests and minimum use of results in proposed revalidation recommendation, I did not further analyse this further. Full test statistics are attached in Appendix 0.

There was divided opinion among doctors regarding making CPD process a mandatory requirement. 31.6% of doctors believed that the CPD process had to be mandatory for all while another 35.2% believed that it must be mandatory for new doctors joining the ministry. 30.6% doctors suggested CPD process as an optional process. 8 doctors participated in the study had expressed a different opinion and they have recommended it to be mandatory for either consultants only or for PG trainees. Table 6-15 summarises the related statistics.

Table 6-15: Making CPD Process Mandatory

	Frequency	Percent	Cumulative Percent
Mandatory for all	97	31.6	31.6
Mandatory for new doctors	108	35.2	66.8
Optional for all	94	30.6	97.4
Other	8	2.6	100.0
This table shows perception on making CPD process mandatory or optional or only mandatory for new doctors.			

During the qualitative stage, there were some concerns raised regarding different CPD requirement for female doctors with children, doctors working in the periphery and doctors who are more than 50 years old and doctors working in full-time private practice. When questioned, the many of the participants disputed the idea of the different requirement for different doctors. However, there was some support for recommending less CPD requirement for female doctors (38.4%) and peripheral doctors (31.6%). Table 6-16 summarises the statistics and full test statistics are attached in Appendix III.

Table 6-16: Different CPD requirements Categories

	Yes	No
Less for Female Doctors	38.4	61.6
Less for Peripheral Doctors	31.6	68.4
Less for Doctors Older than 50 years	12.4	87.6
Less for Private Sector Doctors	5.9	94.1
Less for any other category	0.3	99.7
This table shows perception on making CPD process customized for doctors with different identified categories		

I have used Pearson Chi-Square test to determine if there are statistically significant differences between male and female doctors' responses to suggestion on less CPD requirement for the female doctors. Female doctors reported that there should be less CPD requirement for female doctors with small children compared to male doctors. Kruskal-Wallis Test reported significant difference ($p = 0.000$). However, female doctors do not believe that peripheral doctors should have fewer CPD requirements. Chi-square test done on this reported that there is no significant difference on the opinion on less CPD requirement for peripheral doctors based on the gender ($p = 0.563$). Full statistics tables are attached in appendix 0.

Full test statistics are attached in Appendix 0. Since this was a significant finding I have conducted series of Chi-square test to identify variation of opinions on individual questions based on the gender. In the analysis strongly agree and agree considered as positive responses while neutral, disagree and strongly disagree as non-positive responses (Table 6-17). Full statistics tables are attached in appendix 0.

Table 6-17: This tables illustrate variation of opinion different aspects of revalidation among male and female doctors.

		Pearson Chi-Square Value	Significance – two sided (p)
1	Sri Lanka need proper CPD process	1.77	0.183
2	CPD can improve safety	0.514	0.473
3	CPD improve patient confidence	0.307	0.579
4	need to establish a national CPD council	0.550	0.458
5	online CPD should be included as a component	3.250	0.071
6	Sri Lanka need revalidation	5.108	0.024
7	should include non-medical aspects	0.349	0.554
8	revalidation process should start with CPD only	1.138	0.286
9	revalidation process should include appraisal	0.743	0.389
10	revalidation process should include MSF	0.710	0.399
11	revalidation process should include complaints	0.63	0.803
12	revalidation process will improve patient safety	0.418	0.518
13	revalidation process will improve service quality	0.134	0.715
14	revalidation will improve patient confidence	1.557	0.212
15	revalidation process is cost effectiveness	0.493	0.492
16	revalidation on others	0.087	0.768
This tables illustrate variation of opinion different aspects of revalidation among male and female doctors.			

However, since the sample was only from a tertiary care hospital in an urban area, I could not assess the peripheral doctors' opinion on less CPD requirement for them. This is one of the shortcomings of the study and is discussed further in the discussion chapter.

Similarly, all participants were asked their opinion on liking revalidation to medical registration, annual increment, financial allowance or any other. There was overwhelming support for linking CPD to additional allowance (83.1%) while 45.3% doctors support for linking CPD process to medical registration. Table 6-18 summarises the statistics and full test statistics are attached in Appendix III.

Table 6-18: Linking of CPD process

	Yes	No
Renew the registration	45.3	54.7
Annual increment	27.4	72.6
Obtain additional financial allowances	83.1	16.9
This table shows doctors opinion on linking CPD process for medical registration, annual increment and financial incentives.		

As linking CPD process to financial allowance got substantial support from the participants, I have assessed how likely for they will opt for optional revalidation process if it coupled with revalidation allowance of 25% - 33% of basic salary. 67.1% of the population (Highly Likely - 28% and Likely 39.1%) were in a positive mood for engagement in an optional revalidation process. One of the concerns raised during the qualitative stage was that many doctors who are engaged in private practice will not bother about financial incentive as the latter is minute compared to income from private medical practice. So, I have analysed to see whether there is any difference of opinion based on engagement in private practice and willingness to participate in revalidation process. Here I have considered highly likely and likely responses as on group and the other three options (neutral, unlikely, Highly unlikely) as another group. The results have shown significant different opinion between doctors engage in private practice and doctor does not engage in private practice (P: 0.000). Doctors who do not engage in private practice were significantly likely to engage in optional revalidation process if that involves a revalidation allowance. Full test statistics are attached in Appendix III.

Most of the doctors participated in the study (69.4%) was in favour of establishing national CPD and revalidation council. During the qualitative data analysis, it was

found that there was a different opinion on the composition of the national CPD and revalidation council. Following (Table 6-19) showed opinion expressed by doctors during the quantitative stage.

Table 6-19: Composition of CPD Council

Group /Institution	Percentage of doctors Recommended
The MOH	89.3
SLMC	89.3
Royal Colleagues	50.5
Trade unions	41.7
Medical schools	33.9
Other categories of staff	27.0
Patients	42.7
This table shows doctors opinion on involvement of different organizations for proposed revalidation process.	

Most of the participants expressed the opinion that Ministry and SLMC officials should be included in the revalidation council with both organisations receiving 89.3% of the voting. The inclusion of royal colleges received 50.5% approval while trade union and patient inclusion were slightly above 40%. Interestingly inclusion of other health staff categories received only 27% approval which is even lower than the patient inclusion. This may be due to inter-group conflict within the Sri Lankan health sector. The most participants expressed (90.9%) the opinion that The MOH should bear the cost of the CPD process in Sri Lanka. One of the arguments discussed during the qualitative stage was to introduce revalidation process as an optional process at the beginning even though that will not serve the purpose. However, like an express opinion by consultants at the qualitative stage, there is a significant difference of opinion on college involvement compared to other grades of doctors. Chi-square test had reported that consultants' opinion was significantly more favour on college involvement in CPD Council ($p = 0.000$). Full test statistics are attached in Appendix 0.

At the qualitative stage consultants strongly recommended inclusion of royal college in the CPD Council and even recommended royal colleges for the leadership of the CPD process. Therefore, I have analysed this further to find out consultant opinion comparing it to other grades. It was found that there is a significant difference in opinion on college involvement in CPD council. In addition, consultants were significantly different from other categories of doctors as they were overwhelmingly supportive of the inclusion of professional colleges in the national revalidation and CPD council. This view was also strongly evident even during the qualitative stage of the research. Pearson Chi-Square value of 35.200 and P was = 0.000. Full test statistics are attached in Appendix 0.

Again, like Mandatory CPD, there was divided opinion among doctors regarding making revalidation process a mandatory requirement. 27% of doctors believed that the revalidation process had to be mandatory for all while another 36.2% believed that it must be mandatory for new doctors joining the ministry. 36.8% doctors suggested revalidation process as an optional process. However, approval for mandatory revalidation was slightly lower than that of mandatory CPD. Table 6-20 summarises the related statistics.

Table 6-20: Mandatory Revalidation

	Frequency	Percent
Mandatory to All	83	27.0
Mandatory to New	111	36.2
Optional for All	113	36.8
Total	307	100.0
This table shows mixed response on making revalidation mandatory process from beginning.		

In FGD's and in-depth interviews, participants were mostly suggesting revalidation process in every 5 years with few suggesting it every 10 years due to feasibility and cost. This view was overwhelmingly supported at the quantitative stage with 80.8 doctors recommending revalidation in 5-year cycles. Full test statistics are attached in Appendix III. Most divided among participants were observed on the relative importance of clinical and non-medical components in the revalidation. 44.6% of the participants either believe non-medical components as equally important or more important than clinical components (Table 6-21).

Table 6-21: Relative importance of medical/ non-medical importance

	Frequency	Percent
Strongly Agree	66	21.5
Agree	104	33.9
Equally Important	63	20.5
Disagree	73	23.8
Strongly Disagree	1	.3
Total	307	100.0
This table shows doctors opinion on importance of non-medical aspects on revalidation process.		

The other argument was regarding the cost effectiveness of the proposed revalidation program in a middle-income country like Sri Lanka. Doctors have mixed opinion on cost effectiveness with nearly a quarter of the study population (24.4%) was neutral about cost-effectiveness. However, 46.3% were of the opinion that the proposed revalidation process will be cost effective. Full test statistics are attached in Appendix 0.

7 Discussion & Recommendation

This chapter looks at the overall picture of stage I to stage III of the study with a discussion on viable solutions and recommendations based on the study findings. However, the recommendations and discussions need to be interpreted considering the limitations, bias of the study as described below in this chapter. Therefore, I would explain my position within the research.

7.1 Me, as an Insider Researcher

Insider researcher and outsider researcher perspectives have long been hypothesised in the social sciences. However, its definitions divergent over time and across different disciplines. However, in more recent studies, the arbitrary dichotomous of insider vs outsider was challenged and positioning the researcher on spectrum of insider-ness or outsider-ness was discussed. Nevertheless, researcher's positioning is having significant effect on all stage of the research and is also depends on social, political and cultural values of a certain context(Dwyer and Buckle, 2009).

Many researchers and scholars have discussed different aspects to be considered when conduction insider research to overcome weaknesses and maximizing strengths(Unluer, 2012).

I have identified following strengths of being an insider in the research and the community

- greater understanding of the work culture and the culture of the community

- my presence in the ministry of health is not going to alter the dynamics and the flow of work unnaturally compared to a outsider conducting a research
- intimacy to the community will encourage people to tell the truth

However, I have considered following weaknesses of being insider

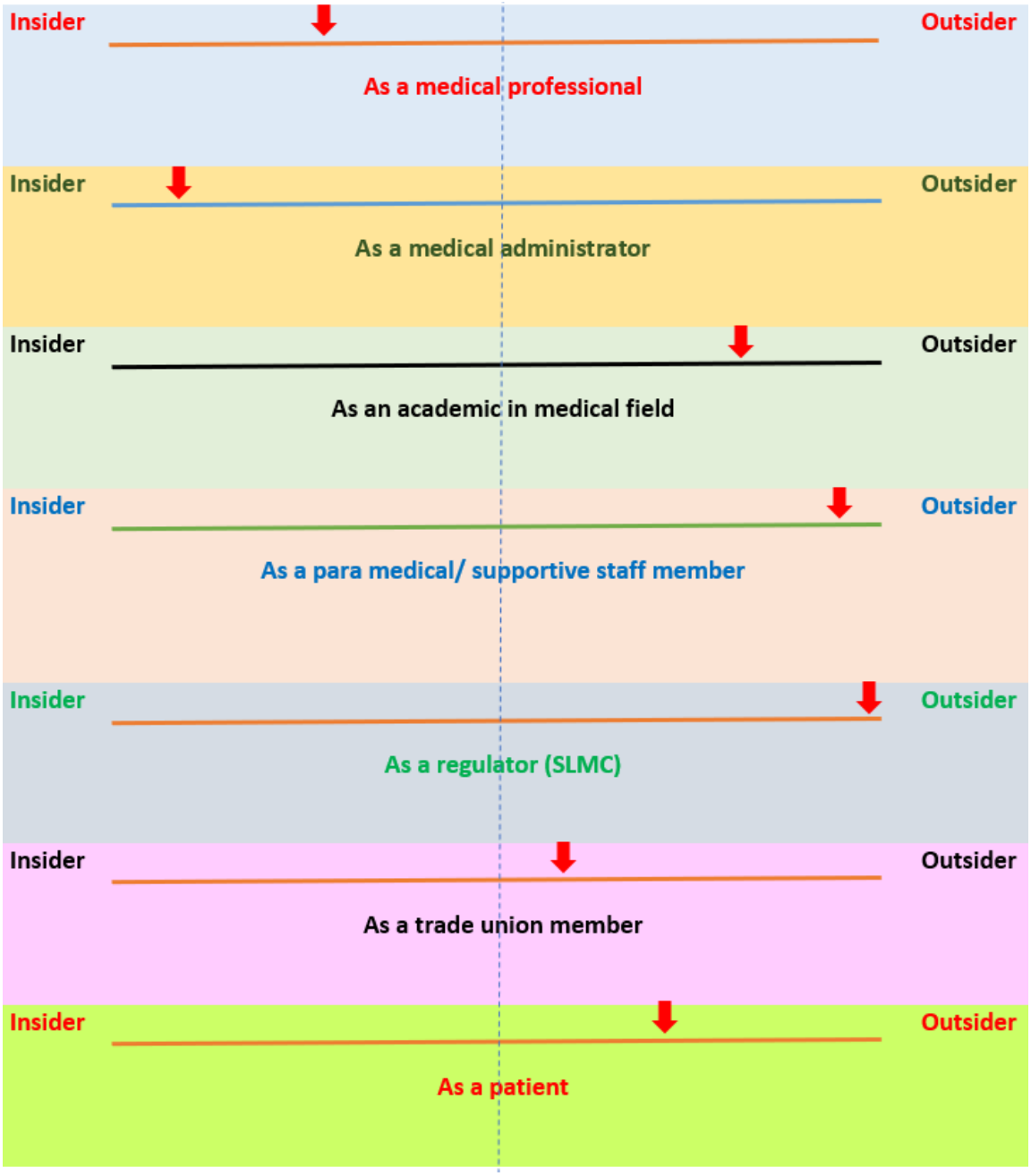
- confusion caused by role duality
- risk of loosing objectivity due to personal perspectives affecting the research
- risk of using sensitive information gathered during study for personal gains or individual career progression
- ethical issues about anonymity of the data

As an employer of the organization I was in a unique position to carry out my study within the organisation. However, the uniqueness is attached with both strengths as well as weaknesses for the study as explained above. It is important to address and overcome the disadvantages in order to ensure credible and objective research. In the context of my research, I consider myself as an outsider while being and insider researcher and my position is explained in detail below and Following figure illustrates influences and contexts relating to my study (Figure 7-1).

Figure 7-1: influences and contexts of the Sri Lankan Health Ministry for me as an insider researcher

The study involves different categories of people and as a researcher I had different roles as an insider as well as an outsider. There can be discussion as well as disagreement regarding exact position of the researcher. However, the most important thing is identifying continuity of the insider-ness/ outsider-ness variable rather than as a dichotomous variable. Figure 7-2 summarizes my positioning with regard to different subject groups as well as overall positioning.

Figure 7-2: My Perception on Insider-ness relation to different stakeholders



7.2 Language barriers

One of the inevitable barriers for the study was to language competency and communication barriers when conducting a study in a country where English is less spoken(Squires, 2009). I have anticipated the barrier well before the designing of the study and due consideration was given followings

- Conceptual Equivalence
- Translator and interpreter credentials
- Role of the translator during the research process
- Consideration of different methodological approach

Throughout the study language was kept as a very fluid and flexible component. Participants were encouraged to use mixed languages (English, Sinhala) to express their opinion accurately as revalidation was a relatively new term in medical community and I was unable to find a correct local language terms for the revalidation despite trying best dictionaries in Sri Lanka. “Conceptual equivalence” means that a translator provides a technically and conceptually accurate translated communication of a concept spoken by the study’s participant. This was the case of many medical terms and other key terms associated with the research project. Almost all the study participants had to use the English key terms when discussing the topic in depth. This is also directly related to the translator credentials as a translator who is familiar with medical terminology and subject of terminology was required. Therefore, I have done the translation myself with the help of two medical record officers who are competent in both English and Sinhala. Presence of a translator is well known to cause changing dynamics of group discussions and focused of the discussion. This is especially when professionals discussing sensitive issues such as their medical registration and their competence. Therefore, the researcher acting as the translator was the best option considering the nature and sensitivity of the subject. Additionally, methodological approach of the project was designed to minimize the impact of language barriers. These include freedom to use both languages during the interview and focussed group discussions, mixed method approach and use of framework analysis. However, I consider language barrier as one of the limitation of the study and caution needed in interpretation of some of the study outcomes.

7.3 Issues of the research design

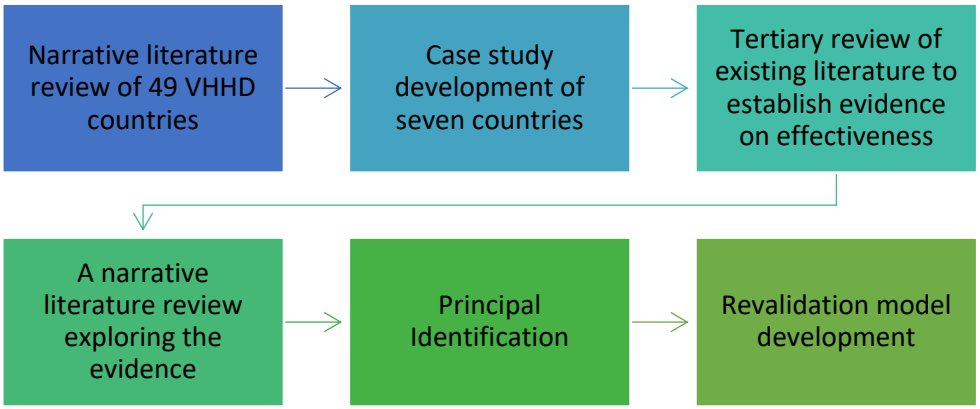
Even though revalidation is on the surface of the medical community for few decades, there is no uniformity or universal structure adopted by all around the world. This may be due to difference is

- Political and administrative structure
- Medical regulation in different countries
- Economic implications
- Social and cultural aspects

From the very beginning, as the researcher, I was concerned about the practical application of the results study in the real world. Many studies on revalidation had emphasised the importance customising revalidation for social, cultural, economic and other concerns. A study conducted on behalf of Australian Medical Board has highlighted the need for such customization. CAMERA project had explored international evidence based on revalidation effective to recommend revalidation options for the Australian context. This study was the most similar project I have found on my literature survey, which had some similarities but with some key differences in research methodology

Figure 7-3.

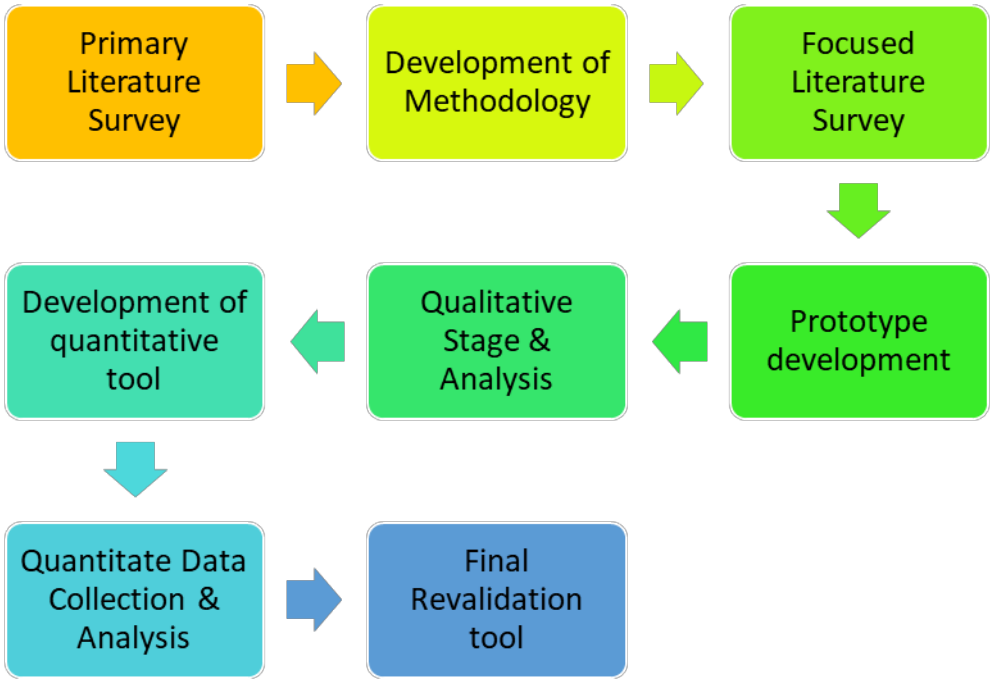
Figure 7-3: Research Process of CAMERA project for AMB



The Australian study was primarily based on secondary data with minimal use of primary data. In addition, the study was primarily a qualitative study whereas my study followed a mixed methodological approach. In contrast to CAMER project, I believe that mixed methodological approach had helped me to get a more comprehensive picture of the revalidation. However, both had used CHAT as a framework for identifying contradiction. Additionally, I have used framework analysis in qualitative analysis. One of the keys and unique difference of my study was the use of prototype to develop revalidation tool. None of the previous studies on revalidation had used the concept of a prototype. However, use of prototype is very widely and successfully used in many sectors including

software development and automotive industry. As we disused earlier, there is robust research evidence on revalidation in international settings and by using prototype, I have prevented duplication of studies and thereby significantly reducing the cost of the process. The low-cost approach is particularly important for a developing country like Sri Lanka. In addition, the use of prototype had expedited the development process of revalidation. CAMERA project for AMB had resulted in developing option on revalidation (Archer *et al.*, 2015) whereas my research had produced a comprehensive revalidation process for Sri Lanka (Figure 7-4).

Figure 7-4: Research Process Adopted in this study



As I explained earlier in the methodology section, my approach was pragmatic and had maintained throughout the study and will continue to maintain recommendation and discussion. I think, as a practising professional, the practicality of revalidation process is the most important aspect of the study outcome. I have used common sense and practical experience in interpreting some of the comments made at the qualitative stage which one may argue and interpret in differently.

One of the distinctive features of this study is the use of CHAT to identify a contradiction in medical revalidation. Activity theory is used by many global researchers around the world for studying complex interactions of medical education. One of the studies conducted in Netherlands had used activity theory to identify cultural complexities and its effect on medical education in the modern day. The study recommended the use of CHAT in culturally complex phenomena (Frambach, Driessen and van der Vleuten, 2014). Similarly, CHAT was used by the CAMERA project and UK Medical Revalidation Evaluation coLLAboration (UMbRELLA) project in Australian context and United Kingdom context respectively. However, I could not find any instance of CHAT being used in the health sector in Sri Lanka. Despite it was not used in medical education and revalidation, CHAT was used in other settings in Sri Lanka. One of the studies conducted to identify mobile phone use among young Sri Lankan farmers had used CHAT (Dissanayeke *et al.*, 2014). In addition, another study on expansive learning among social sciences undergraduate students in the island (Wijesundera and Murphy, 2012). So, I believe that this study will open a path for other researchers in Sri Lankan health sector to use CHAT which I personally believe is easy to use the comprehensive tool in Sri Lankan healthcare settings.

The effectiveness of revalidation as a tool in improving patient care is still debatable. There is a relative lack of studies to provide robust evidence on the effectiveness of revalidation. As the UK is the only country to have fully developed and integrated revalidation process, it is worth discussing finding from post-implementation research. GMC had collaborated with a group of researchers called UMbRELLA, led by Plymouth University Peninsula Schools of Medicine and Dentistry to carry out a long- term evaluation of revalidation. They have started their project in 2014 and expected to finalise in 2018. However, they have published an interim report in January 2016. The report highlighted the overall success on the engagement of medical doctors on revalidation process with mixed views and mixed perception on revalidation

process. I have used some of the findings on the interim report in shaping my recommendation on this report (Archer *et al.*, 2016).

One of the key message delivered during the study is the importance of gradual implementation of revalidation process. On the literature search on phased implantation of health policy, I found that there is increasing use of relatively novel research design which can be adopted by the National CPD and revalidation council for implementation of revalidation process in Sri Lanka. The approach is called stepped wedge cluster randomised trial and there were many successful examples of the approach (Hemming *et al.*, 2015). A similar model was adopted by many health system researchers (Archer *et al.*, 2015). The stepped wedge cluster randomised model is suggested because

There is already some evidence within Sri Lanka and more robust evidence globally on effectiveness of the revalidation and includes

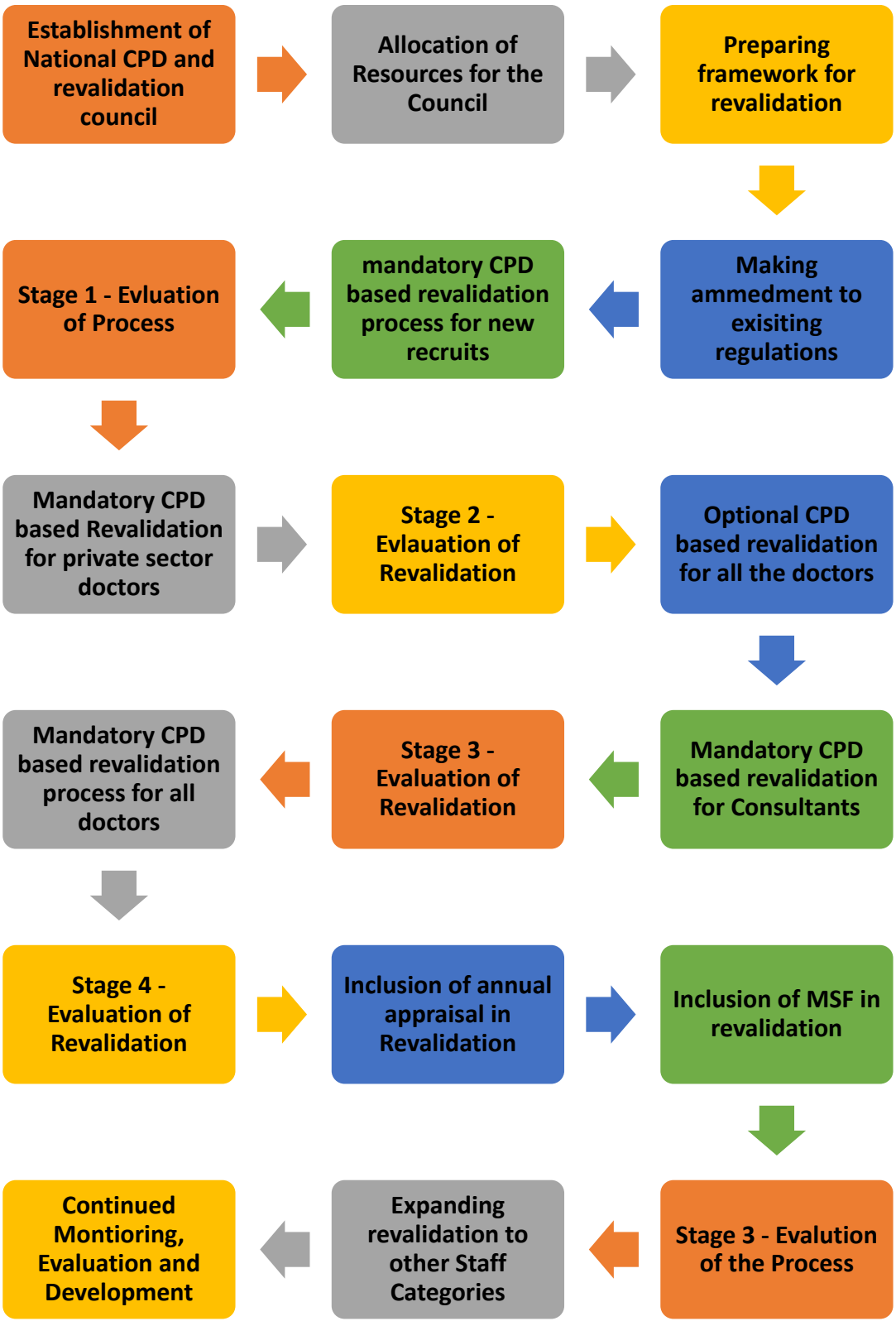
- There are some doubts over its effectiveness among some categories
- There is need for system development to before full implementation of the program
- Resources are not available for implementing revalidation process in full scale
- Ability to evaluate effectiveness by comparing revalidated groups and non-revalidated group
- Relative effectiveness of different revalidation tools in relation to different wedges or groups (Hemming *et al.*, 2015).

Stepped wedge cluster randomised trial was initially used in clinical scenarios. One of the first such is Gambia Hepatitis intervention in which giving hepatitis B vaccination program was implemented in a stepwise manner to prevent hepatic cirrhosis. Another example which is more related to the health system is Sure Start program to support preschool children in deprived areas. The effectiveness of this approach was proven in many other scenarios and fields (Hemming *et al.*, 2015). One of the studies conducted on restructuring intrauterine contraceptive

devices service in developing countries, which included in Sri Lanka, had used stepped wedge cluster approach successfully (Canning *et al.*, 2016). The stepped wedge approach will also help to reduce the sample size of post-implementation revalidation research (UNESCO, 2013). Therefore, maximising use of resources and more suitable in countries like Sri Lanka as low- budget is available for research and development. Sri Lanka is one of the countries with lowest budgetary allocation for research and development. In 2013, only 0.01% of the gross domestic product is allocated for research and development whereas UK had allocated 1.7 in 2014 and Australia had allocated 1.6% of GDP (World Bank, 2014).

Figure 7-5 shows a recommended stepped approach for revalidation process in Sri Lanka. However. In a study conducted by CAMERA project for Australian Medical Board also recommended a similar approach in implementing revalidation in Australia.

Figure 7-5: Recommended Steps for Revalidation Process in Sri Lanka



The CAMERA project undertaken to look for option for revalidation in Australian Medical Board had recommended

- Clear statement of purpose of the revalidation
- Facilitation
- Identification of target groups and special consideration on those groups
- Provision of money, man, material and time
- Adoption strict and proven quality controlled approach
- Focus and involvement of patient at the centre (Archer *et al.*, 2015)

Each principal is connected to each other. Same principals should be applied in Sri Lankan settings. However, certain areas may need cautious approach due to social and cultural nature of the Sri Lanka society.

7.4 Context of Revalidation

As discussed in stage II - literature review, the USA is having multiple regulatory and registering authorities and their revalidation/ maintenance of licensure requirement also differ from one state to another state. In contrast, the UK, despite union of four countries, medical registration and revalidation come under one umbrella organisation, the GMC (Shaw *et al.*, 2009). In Sri Lanka, despite being some grey areas with 13th constitutional amendment, medical registration and medical recruitment largely follow the centralized process. SLMC is the sole authority for medical registration and the MOH exert most powers related to medical recruitment. Most of the research participants express the opinion that The MOH should take the lead as well as an initiative on medical revalidation process in Sri Lanka. Few research participants raised concern over technical competencies of ministry officials on revalidation of medical doctors, especially specialist medical officers. They suggested more authority to be given to professionnal colleges. This opinion was not well supported by a larger sample of quantities stage.

The suggestions by the consultants, in my opinion, is showing power struggle between medical directors and consultants.

"I strongly object an administrative person in the ministry apprising a consultant as that person have no knowledge of consultant's duty. So, he should not take the top spot and decide the outcome."

In Sri Lankan health system, only a medically qualified person with at least master's degree medical administrator can be worked as a director or the chief manager of an institution. In contrast, the UK and other health systems chief executive officer can even be a non-medical person. In my opinion, this shows power struggle between them. The opinion of medical administrator participated in the study were sharply deviant from consultants. This was clearly evident from the remarks made on professional college involvement

" I think health authority should have the responsibility. We can get their guidance, I mean professional colleges ….. We can get the help. …… It is the health authorities' responsibility. ….. Authority is the authority and ministry should take the responsibility. "

However, this much be interpreted with caution as obviously being a medical administrator I may be biased towards one side, even though I tried to be impartial. Further, it may be very difficult from someone outside to interpret internal dynamic within the health system of Sri Lanka. Similarly, grade medical officers had a different opinion on this matter and could be interpreted as a result of power struggle between grade medical officers and other categories. One may argue that Sri Lankan health system requires significant changes in administrative structure to resolve power issue that can negatively affect revalidation process. However, in my opinion, the changes of hierarchical power

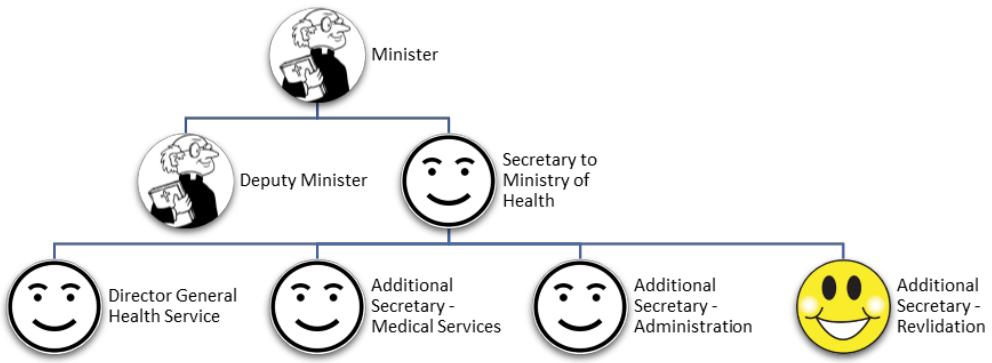
in the government sector is embedded in the culture and may not be easily changed. Therefore, we need to implement the revalidation process with in the existing system with necessary modifications to overcome adverse effects of internal power struggles.

Similarly, in the quantitative stage, a clear majority of doctors suggested to include SLMC and The MOH in the revalidation council with 89.3% supporting while only 50.5 thought involvement of professional colleges in the revalidation council is required (Table 6-19). Despite this relatively less overall request for professional college involvement in revalidation council by non-specialist grade doctors, I personally believe that professional colleges should be given a prominent place in the national CPD and revalidation council as they can provide much needed technical competency for the revalidation process. In addition, the majority of the consultants have the first-hand experience on revalidation process during their training program and overseas training period. On analysis, it was found the first-hand experience on revalidation process was minimum among Sri Lankan doctors except for consultant category and none of the grade medical doctors at the qualitative stage had first-hand exposure to a revalidation or a similar process. Therefore, it may be wise to start a wider discussion among medical doctors regarding the revalidation process and its objectives. It was evident that some grade medical officers may not have a clear idea of revalidation and can oppose strongly thinking it is an exit-exam like final MBBS.

In addition, we need significant changes to legal and organisational framework to dissolve more power to professional colleges. At present, royal colleges are independent entities and no direct administrative relationships with the health authority. I recommend The MOH to keep the leadership of the revalidation process while changing the structure of revalidation board to include more representation from professional colleges for assessment of specialist medical officers. This is because consultants had significantly different opinion regarding college involvement in the CPD and revalidation process. So, in contrast to the Directorate under the Ministry, it is recommended to start a CPD & revalidation

council under the MOH. The council can be placed separately from the director general of health services. It is recommended to appoint an additional secretary for the new National CPD and Revalidation Council. Placing revalidation separate from the director general of health service will make the establishment of council easy. Also, it will help to attract more budgetary allocation directly from the ministry. In addition, placing revalidation process at a higher level will make it more empowered to interact with external organisations such as universities, SLMC, patient support groups. However, there is a risk of politicisation of the new council as all additional secretaries are appointed by the minister. Another risk of this approach is the marginalization of the new directorate from the existing framework due to internal power struggles in the ministry of health (Figure 7-6).

Figure 7-6: Proposed Administrative Placement of National CPD council



The council should be mainly composed of SLMC representation and The MOH representation. Additionally, other institutions like colleges, a medical trade union can have representation. Involvement of other categories of health staff and patients were not very welcomed at the quantitative stage. However, in the

qualitative stage, many argue the importance of patient involvement in revalidation process. Benefits of patient involvement were assessed in post-implementation research in the UK and found to have a positive effect on all areas of revalidation. In a study conducted in the UK reported that

- Importance of patient feedback to be more integral in the revalidation process
- Nearly 40% medical doctors agreed on improvement of practice because of patient feedback
- 44% of managers agreed on improvement of practice because of patient feedback
- 67% responsible officers agreed on improvement of practice as a result of patient feedback (Critchley *et al.*, 2014)

Special caution needs to be paid interpreting patient feedback as it was found that many factors including age, gender, recent experience as a patient, health literacy and many other characteristics can have an effect on the feedback (Bere *et al.*, 2015).

So, I recommend patient representation at the CPD and revalidation council from the beginning. It may be worth them giving only chance to express an opinion on non-medical aspects of revalidation as they may not be knowledgeable enough to advise on medical aspects actively. However, due to the strong possibility of resistance, it is recommended to withhold para medical representation at the initial stage. However, with the introduction of revalidation to other categories of staff, we can include them in the revalidation council. As then there will be a two-way feedback rather than a one-way feedback process (i.e doctors giving feedback on paramedics and paramedics giving feedback on doctors). The CPD and revalidation council needed to be empowered to make the framework for revalidation. The framework will guide the revalidation process in the government sector and in the private sector. The framework can be like GMC framework in The United Kingdom. It is important not to make rigid protocols at the beginning and let the system itself to develop the revalidation framework according to emerging requirements. Many countries have adopted such a process and had

given flexibility of revalidation and recertification process as discussed in the previous chapters.

However, it is very important to get an opinion from all stakeholders before and from the beginning of the revalidation process. I recommend using this report to be used as an initial step of revalidation design and implantation in Sri Lanka. The expedited process is required for quicker implantation and for cost effectiveness. There are many lessons we can take from early system development in the UK and studying post implantation early research which is emerging now as the UK is completing first revalidation cycle in 2017. There were many criticisms by stakeholders regarding the UK revalidation process. A recent research had voiced responsible officers' concern and I think it is worth quoting some of the arguments raised by the participants here. One of the participants had reported

"The revalidation process was conceived and launched many years ago without any significant regard or involvement of those who would have to implement it. That is the role of Responsible Officer often fell to medical directors, who already had a full timetable."

Another participant from the same study had voiced

"Only obstacles are resources; time, energy and costs. I also do not get the impression that the revalidation process was considered in sufficient detail before the launch. Questions are often responded to by saying that there is no answer, but that it will get 'figured out'. This uncertainty leads to time, funds and energy losses. I would have liked to see that the introduction was, and the current process is, smoother - more business-like, clearer processes and policies, perhaps with more legal input and support."

Therefore, it is essential that the Revalidation and CPD council, once established, to start formal research on stakeholders' opinions in depth.

Adequate budgetary allocation is a must for effective implementation of revalidation process in Sri Lanka. Participants expressed the opinion that the revalidation process is cost-effective means of improving healthcare service quality in Sri Lanka. However, as discussed in chapter six, initially the effects may not be obvious as it may take substantial time for effects to be effectively apparent on the surface. Similar concerns were expressed with the UK system, some questioning the effectiveness of the current system as it cost about 1 billion pounds a decade (Department of Health, 2012). Sri Lankan, health system required to design performance indicators of revalidation to assess the cost-effectiveness and cost-benefit analysis. We also need to show medical doctors that they are getting financial and professional benefits by participating in revalidation. This can be achieved by showing that the costs associated with revalidation are less compared to the income improvement such as revalidation allowance. Figure 7-7 shows an example of cost for an individual doctor by to health system. Similar, predictions needed to be prepared before implementation revalidation with the health of health economist in the country.

Figure 7-7: Cost of Revalidation (Source: Medical Revalidation and Benefits – Department Health the UK 2012)

Description	Cost	Cash / opportunity costs[10]
Cost of undertaking annual appraisal (doctors)	£1,200 per annual appraisal, for 27% of doctors not previously appraised	Opportunity
Cost of undertaking annual appraisal (appraisers)	£680 per annual appraisal, for 27% of doctors not previously appraised	Opportunity
Responsible Officer costs	£162 per doctor every five years	Opportunity
Training costs	£22 million over the first three years of implementation	Opportunity
Administrative, organisational and clinical governance costs	£27 per doctor	Cash
Remediation	£3,600 per intervention, for an additional 1% of doctors	Cash / Opportunity
Multi-source feedback	£458 per doctor every five years	Cash / Opportunity
Regulator costs	£6.1 million over the first two years of implementation, approximately £950k per year thereafter	Cash / Opportunity

We need to get the help of the health economics for the preparation of the budget for the revalidation process and expected benefits of the process in the loger term. This is very important as we may need parliamentary and cabinet of ministers approval for rationalizing the revalidation expenditure. The political structure can reject the entire process if they were not convinced with the cost-benefits analysis. In addition, Sri Lankan health system requires a solid back ground for future analysis of the effectiveness of proposed revalidation to justify the possible cost of revalidation. Since health system does not have a proper mechanism of auditing, there is an urgent need for establishing such mechanism. If implemented early, the evidence can be gathered to compare evidence from future after implementation of revalidation process. Table 7-1, below shows a suggested key performance indicators to evaluate the present system and for evaluating effects implementation of revalidation.

Table 7-1: Key Performance Indicators for future revalidation

Domain	Measure	Indicators
Patient Safety Improvement	Harm and deaths avoided	Reported number of deaths Near-miss reporting Serious incidence reporting
Improvement of quality of care	Improved quality of care from doctors	Number of complaints Reduction of SLMC incidents
	Increase work satisfaction	Absentees and drop-outs from the service Number of organisational conflicts

Some of the responsible officers and other stakeholders in the UK system has raised concerns about costs associated with revalidation despite it reported revalidation is a cost-effective process. Obviously, such criticism will be more frequent in Sri Lankan health system as Sri Lankan health expenditure is tighter compared to developed countries.

Most of the research participant had the impression that the revalidation should be implemented in a stepwise and gradual manner. As suggested by them priority should be to established national council for CPD and revalidation rather than the council for revalidation. This would be very helpful in changing the impression of doctors regarding newly formed directorate as CPD will be regarded as a harmless and useful thing by medical doctors. More on this is discussed below under the content of revalidation. In addition, more representation from professional colleges should be included in the subcommittees and colleges should be allowed to make minimum criteria for CPD requirements. In addition, all CPD providers should be registered with the national council for CPD and revalidation. Independent programs without financial support from the MOH should be encouraged to improve the availability and accessibility of accredited CPD programs. Royal colleges, a private organisation can apply for accreditation for their CPD programs including skill development programs. The CPD providers should be self-funded and they can

market their products to the doctors. The doctors can use their revalidation allowance for accredited CPD program and collect CPD points for revalidation. Independent programs without financial support from the MOH should be encouraged to improve the availability and accessibility of accredited CPD programs. National Revalidation and CPD Council should empower doctors to make informed choices about deciding their own CPD needs and selecting CPD programs for their requirement. In the UK, GMC has prepared a guidance document on continuous professional development and similar guidance is required. However, GMC – the UK did not provide or maintain a list of accredited service providers (General Medical Council, 2012a). There are independent organisations and accreditation services for that purpose. However. Due to social background and due to issues with corruption, I recommend National CPD and revalidation council to maintain a list of accredited CPD providers.

One of the fear doctors highlighted during the lack of proper systems in Sri Lanka. I think The MOH can use revalidation process as an opportunity to develop and test a new administrative system. In my opinion, gathered and modified during the research process is to develop comprehensive online management information system for revalidation process linking all the stakeholders including individual doctors, CPD providers, SLMC, The MOH and National CPD and revalidation council. A system like German would be very helpful in Sri Lankan settings where there are many criticisms of bureaucratic nature and slowness of process in Sri Lanka. Like in the German system, we can issue unique identification number based on SLMC registration number for an individual doctor for their access and for the use of revalidation process (Merkur *et al.*, 2008). They should be given the opportunity to self-reflect on CPD programs they attended and to rate CPD programs. Individual doctors should provide accredited CPD providers with their unique number for them to enrol in CPD programs. Upon completion, the CPD points should be automatically added to the individual doctor in his portfolio. Such system will be very convenient to use and will be very efficient as a minimum requirement of human resources which are very sparse in the health sector. In addition, automated system notification can be

set to remind doctors about revalidation requirements and re-registration requirements.

One of the arguments discussed during the research was different CPD requirements for female doctors and peripheral doctors. At the qualitative stage, respondents expressed the concerns over unavailability of adequate and fair chances of participating CPD programs for the doctors' work in rural settings. However, there was nothing much emerged with regard to female doctors' revalidation except for one consultant group participant who suggested consideration on non-medical responsibilities when deciding revalidation on female doctors. I believe that this should not be the case as we are aiming at improving patient safety and any difference is likely to make the impression on patients that male doctors are better than female doctors. In the review of GMC - UK statistics had, however, show that female doctors are more likely to defer their revalidation compared to male counterparts. This may reflect more household and child caring responsibilities even in UK settings (Rimmer, 2014). Therefore, in Sri Lankan settings the effect of child caring and household responsibilities likely to be more significant. I am almost certain that no country in the world have set up two level of revalidation requirement based on the gender and certainly will not have a place in the proposed process in Sri Lankan settings.

On the other hand, the same principle applies in the case of peripheral doctors. Even at present, many villagers believe that doctors from larger institutions are better than their local doctors. A probable explanation for this could be due to the majority of consultants are working in larger institutions and availability of better diagnostic facilities at larger institutions. There were suggestions by some to have different CPD point for doctors working in the rural hospitals. However, the idea was not supported at the quantitative stage and probably there was no representation from rural doctors. Despite this, I recommended having two levels of CPD requirements for doctors with a lower level for doctors working in the periphery. I believe that this will be very helpful to minimise the resistance from

the peripheral doctors. My personal belief is that we should have one level of revalidation requirement for all non-consultant grades and another level for consultant grades. However, having a lower level of revalidation requirement may encourage doctors to go and work in the periphery which may result in improving the fairness of doctors' distribution. As discussed in the introduction chapter, there is a significant variation of doctor: patient ratio in Colombo compared to that of Mulative district.

Revalidation of Sri Lankan doctors working abroad should not be a priority at this stage as recommended by research participants. However, a foreign specialist working in the country need to demonstrate their CPD and related activities as it can have a significant effect on quality of patient care, especially in the large private hospital. Private sector revalidation should address these issues under the framework provided by the National CPD and revalidation Council. It is recommended to use the same criteria as government sector consultants.

7.5 Content of Revalidation

Most research participants agreed that CPD, annual appraisal, MSF as well as patient complaints are all can have a positive impact on quality of service provided by the activities. They agreed to a concept that all the component be included at some stage of revalidation process. A recent research in The United Kingdom on Implementing medical revalidation has found out that most responsible officers believe that all tools used in revalidation in the UK have a significant effect on quality improvement and clinical outcomes. 65% of study participant believed that participation in CPD can bring quality improvement while participation appraisal was given green nod by 77%. The same figure for complaint analysis was as high as 80% (Figure 7-8).

Figure 7-8: Responsible Officers opinions on the UK revalidation tools (Walshe et al., 2017)

	A lot worse		A little worse		No change		A little better		A lot better	
	N	%	N	%	N	%	N	%	N	%
Appraisal	0	0%	0	0%	83	23%	212	59%	65	18%
Participation in CPD	0	0%	1	0%	110	35%	145	46%	59	19%
Responses to complaints	1	0%	2	1%	100	30%	171	51%	63	19%
Participation in quality improvement	0	0%	3	1%	70	21%	179	53%	86	25%
Responses to significant events/SUIs	0	0%	1	0%	84	25%	173	51%	83	24%
Actions taken in cases of doctors causing concern	0	0%	0	0%	102	31%	136	42%	88	27%

Similarly, in this study, following tools were considered as a successful tool for improving patient care by the research participants. The majority of the participants expressed the opinion that revalidation process should be only started with CPD program. It is recommended to start a mandatory CPD program for new recruits and at the private sector as we need a system to develop gradually. As the number of new doctors registering in one year is around one thousand and even the National Council itself can give monitor grievances of individual doctor closely until adequate and fairly distributed CPD program is available (Table 7-2).

Table 7-2: Agreement on different revalidation tools

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
revalidation process should start with CPD only	38.1	40.4	13.4	6.8	1.3
revalidation process should include appraisal	23.5	38.8	28.3	8.1	1.3
revalidation process should include MSF	17.3	27.0	29.3	23.1	3.3

We need to consider modern adult learning theory when designing CPD programs for the Sri Lankan doctors. Malcolm Knowles (1973) explained that

there are key differences between adults learning (andragogy) and children learning (pedagogy) (Knowles, 1984). However, more recent researchers argue the differences as artificial and they consider pedagogy and andragogy as two ends of continues spectrum. They further argue that all aspects of learning applicable with different emphasis at a different stage of the life cycle (Taylor and Hamdy, 2013). Understand of difference between adult learner will help to determine the design of CPD programs and adults are more willing on

- Involvement in planning and evaluation of their training or CPD programs
- Using experiences as a basis for new learning
- Looking for more immediate relationship to their practice rather than more remote and arbitrary outcomes and activities that have direct impact on their job or personal life
- Context-oriented activities rather than content-oriented activities (Kearsley, 2010).

Taylor and Hamdy (2013) further suggested a model for teaching programs for adult learners in medical education (Taylor and Hamdy, 2013). In addition, more and more research evidence suggested the use of multiple educational methods for the optimum outcome and maximum efficacy as discussed in chapter 4. I recommend National CPD and revalidation council to produce guidelines on how to design CPD program and have a mechanism to accredit the CPD program. Though, not discussed in detail during qualitative and quantitative data collection stage, one of the ways is to allow private sector/ not-for-profit organisations such as clinical societies to allow designing and conduction CPD program which is approved by revalidation committee of the MOH. This will allow the ministry to reduce the need for resources for CPD programs as well as quicker penetration of CPD programs in the open market. As there are clinical societies in most localities, they can make tailor-made CPD program for the locality. In addition, the clinical societies will be more active with the financial gains from conducting paid CPD program. As one of the participants suggested this will help clinical societies to get away from the grip of pharmaceutical companies.

Many participants raised concern about fairness and accessibility of CPD programs and material and identified as a key issue in implementing mandatory revalidation. One of the solutions they suggested was to use online methods for delivering CPD programs. This was further recommended by participants as a low-cost mechanism for delivering CPD, therefore, more suitable for a middle-income country like Sri Lanka. However, one of the arguments against one CPD program was the quality of such programs and effectiveness of online programs. Participants recommended having a committee to assure the quality of programs and post-exposure assessment as one way of assessing the effectiveness. Also, having a mechanism for collecting and analysing reflective account on online programs will also help to identify effectiveness and required improvement. Most participants, however, agreed that online CPD should not be as an only way of CPD attendance. Many recommended less than 50% of CPD as online CPD points. I recommended using a blended or hybrid model of online and classroom based CPD. It will be more effective to design adjuvant classroom based program to improve the online program. The linking of the online and classroom program will also help to increase the uptake of classroom based programs. The arguments were supported by research evidence. A research in the UK has shown over 90% of healthcare practitioners have identified e-learning as effective means of CPD and helpful in improving patient care when combined with classroom-based learning (Gill, 2007). Similarly, an Australian study conducted among surgical and oncology trainees also provided more evidence on the effectiveness of blended approach including online CPD along with traditional CPD lectures (Gyorki *et al.*, 2013). However, overdependence on the online program found to have a demotivating effect and also excessive use of private time (Gill, 2007). The same study had reported age as a barrier for blended online programs as older physicians tend to use less online methods for CPD process (Gill, 2007). This is an important fact to consider as research participants identified older “chronic Doctors” as one of the targeted categories. In addition, they are likely to release into the unregulated full-time private practice which can compromise patient safety. Another study conducted in the UK among medical students has shown that e-learning was considered as a supplement to improve effectiveness rather than a replacement (Blake, 2010). The study further highlighted the need for a blended and hybrid model of CPD process. An

experimental research conducted to evaluate novel technique of Constructivist Tri-Dimensional (CTD) model for online based facilitate interactive and reliable learning had found that it as an effective mean of CPD. The CTD model had used concepts from adult learning theory, problem based learning (Seo and Engelhard, 2013). Novel and innovative approaches are recommended for developing CPD process for Sri Lankan doctors as we need low cost and low resource dependent effective means of CPD.

One of the most consistent views expressed by research participants was the unavailability of an organised system of CPD program in Sri Lanka. It was further identified as the main barrier for implementing mandatory revalidation program. Organisational culture in Sri Lankan health has both positive and negative aspects. Many large institutions including teaching hospitals value CPD within the organisational and this is particularly true in the case of teaching hospitals as teaching blended to organisational culture. Many research has identified organisational culture as a key component of CPD program success.

One of the key themes emerge during the qualitative analysis was the unavailability of the middle grade in the MOH. The present structure of the Sri Lankan health system is to grade doctors according to their service experience. However, grade of the doctor, apart from Consultant grade, has nothing to do with the level of responsibility. The present grading system is only linked to increased salary and ministry seniority. Establishing middle-grade with increased responsibility is recommended to use the experience of doctors in better way lower the workload and improved the efficiency. Spare time of the consultant can be used to delivering CPD for the other doctors and for future appraisal. In addition, using redundant senior doctors will improve the efficiency of the health care system. Therefore, development of a program with embedded CPD for the so-called “chronic doctors” is an essential development requirement for the country. National CPD and revalidation council can decide on this and may need further study in Sri Lankan context. However, preference of participants is

important as different doctors may prefer distinct types of CPD activities. One of the large-scale study conducted in Australian doctors revealed following facts

- learning in a group - 95%
- face to face lecture - 83%
- interactive group discussions - 70%
- online self-education - 55% (Yee *et al.*, 2014)

As the results show significant support for traditional lectures despite evidence suggesting that traditional lectures as one of the least effective means of CPD

One of the controversy of the studies is relatively low support for patient involvement in revalidation process for Sri Lanka. Arguments of the participants were a lack of health literacy among patients and their concentration on non-medical aspects more than medical aspects. However, interestingly, the quantitative study results had reported that majority of the perceived patient involvement as a crucial step in effective revalidation process. Many higher-level managers and political leaders increasingly believe that active role of patients encouraging to improve quality, the efficiency of healthcare. A meta-analysis conducted to view this had shown that improving the health literacy of patients as the key step in increasing effective patient engagement in healthcare. It was suggested use range of measures to increase the health literacy of patient population (Coulter and Ellins, 2007). These include

- Preparation and distribution of printed leaflets and electronic media containing key information
- Provision of trusted and unbiased Internet health information by a trusted authority
- Targeted approach to low resource and disadvantaged communities
- Targeted mass media use

Sri Lanka having high literacy rate which is comparable with developed countries and literacy rate is likely to improve as most of the illiterate are very old people (UNESCO-UIS, 2013). There are multiple agencies involved in health education

in Sri Lanka and significant budgetary allocation is already provided. However, in my opinion, most of the health education activities are not well designed and targeted. National CPD and revalidation council to get the support from the ministry to improve patient health literacy as well as health system literacy on complaints procedure and effective use of health system resources. The latter can reduce the burden of doctors by reducing the overcrowding and effectively using the system. However, as discussed, the direct involvement of patient is not recommended at the early stage of revalidation process in Sri Lanka due to the high probability of resistance from the medical doctors and trade unions.

Even though, Sri Lanka is far away from implementing full implementation of proposed revalidation system, there is a requirement of amending current medical ordinance, doctors job contract and alternatives for doctors who are unable to complete revalidation. Above aspects needed to be discussed at legal and political platform more extensively as they can cause significant unrest among medical practitioners as well as among public. As explained in introduction, all the doctors in government health sector are full time, permeant and pensionable members of government service. Any changes to above is likely to spark widespread unrest among trade unions in health sector.

7.6 Limitations of the study

This part of the research discusses my own view of the possible limitation of this research study. The limitation ranges from the limitation of resources to limitation of study design, the scale of the study, the timing of the study, selection of study participants.

As a practising professional in the MOH in Sri Lanka, my intention was to design comprehensive revalidation tool for the country from the beginning. However, once I started reading on the subject, I realised the scale of the topic and difficulty of carrying out the research as an individual researcher. First and one of the most limiting factors was time. In addition, my DBA program was for 3 years and I was allowed only 3 years of leave from my job for carrying my DBA studies. However, the first year of study was dedicated to learning different perspectives and research methodologies, only 2 years left for the study. During the second year, I have developed the theatrical background and methodology of the study. During the third year, I had to spend considerable time on obtaining ethical and administrative clearances from the relevant authorities. So, the actual data collection was limited for about 3 months which I personally believe not an adequate time for more extensive exploration of the subject under study. I have attempted to overcome the limitation of time by designing the study based on a prototype developed by myself.

I have had some emailed and another contact with researchers and teams who were involved in similar kind of projects. Most of the researchers were funded by government organisations and cost were above 100000 pounds in most of the studies. In addition, the researcher was sponsored and initiated by medical boards (Archer *et al.*, 2015) or health departments (Archer, Bere and Nunn, 2014). The cost of my study is the negligible and direct cost is less than 5000 pounds. As this is a self-funded project I had to look for low-cost approaches in most occasions. This may have affected the quality of the research. However, as stated from the beginning my approach to this study would provide an alternative low-cost study methodology for health system researchers for other developing countries.

One of the major drawbacks in the qualitative data collection was the unavailability of the view of the SLMC officials. I was unable to arrange an FGD with them during the data collection period as SLMC officials, very few in numbers, was involved in legal battle with private medical college called SAITM.

There was a bomb attack on SLMC premises and attack on some of the members. Therefore, I had to replace the SLMC representation with an SLMA office bearer who was a past member of SLMC office. In addition, I was unable to arrange the FGD with GMOA official due to the same reason. However, I could arrange in-depth interviews with GMOA office bearers.

Although I have discussed revalidation for the private sector, which is <2%, of the doctors' population in Sri Lanka, the study did not involve any private sector representation. This could be another limitation of the study. However, most participants expressed the opinion that there is no significant difference on CPD requirement depend on the place you work. However, this could lead to problems as appraisal process and MSF is different in the government sector and the private sector.

One of the themes appeared during the qualitative data analysis was constraints for peripheral doctors to participate in CPD process. However, the quantitative stage included only two teaching hospital, it lacks the representation from peripheral doctors' group. This can be one reason why quantitative stage did not support reduced CPD requirement for peripheral doctors. It would have been much better if I included a sample of peripheral doctors in the quantitative stage.

Sampling techniques used in the qualitative stage was convenient sampling. As the researcher, I had used my personal contacts to arrange FGD's and in-depth interviews. Even though I have taken care to include wider representation from different geographic, ethnic, social background, I may have failed to include a representative sample for the study. In addition, I must limit the research only in English in language, despite it is not the native language. However, during the FGD's and interviews some participants used the Sinhala language which I had to translate. This could have led to possible errors in theme generation and framework analysis at the qualitative stage.

It would have been much better if I included a sample of medical students as one of the recommendations of the study was to start revalidation process from new recruits to the MOH, who are medical students at present. So, it can be considered as a limitation of this study. Additionally, the study would have been much better if I could include political representatives. Additionally, I could not come up with the financial aspect of the revalidation process with a number, which will be a fundamental requirement before thinking of implementation of a revalidation process. However, as an individual researcher, I did not have adequate resources to assess these aspects.

One of the most interesting point emerge during the research process was having different revalidation requirement for female doctors. This was mainly raised by the female medical doctors participated in the study. However, this was not supported by the other categories. In my opinion, implementing less revalidation requirement will be a double-edged sword. On one side there is a risk of female doctors become less competent and there is a serious risk of instilling an idea among public that female doctors are less well qualified. However, in Sri Lankan culture, females carry the significant burden of household responsibilities and female doctors will not have adequate opportunities for CPD as compared to their male counterparts. I think, this is a limitation of my study and further evaluation on effect of gender on medical revalidation in Sri Lanka need to be considered in-depth in a future research.

Despite the number of limitation, I personally believe that this study had filled the much-needed gap in the medical revalidation in Sri Lanka. The recommendation from the study can use to start a formal and official discussion on revalidation in the country.

7.7 Suggestions for future research

I think this study provides an alternative and low-cost approach to health system researchers around the world. Therefore, this approach can be used in a variety of settings in health care to design a new program specific to that locality and not limited to revalidation and related fields. The cost saving can be achieved by not trying to invent or discover by using things that are already invented and discovered.

In Sri Lankan settings, it is worth to replicate this study on a larger scale if the regulators believe that this study does not provide the full scale. They can consider the limitation I have discussed to expand the study into more and wider geographical and social perspectives. Also, the same study methodology can be adopted for nursing officers and other paramedical groups. As there is a wider discussion about the quality of doctors and quality of medical education, I personally believe that this is the right time for establishing such processes to maintain and the improve the quality of human resource for health in Sri Lanka. The idea was well supported at both qualitative and quantitate stages of the research study.

Similarly, developing countries and other Asian countries can use this approach to develop their revalidation programs quickly while maintaining system expenditure at a minimum level. Particularly, India needs to consider using revalidation or similar process to scrutinise and to maintain the standards the medical professional in India. In 2015, Reuters had a special report published on " Why India's medical schools are plagued with fraud" and reported the serious concerns about quality and legality of doctors produced by Indian medical schools (MacAskill, Stecklow and Miglani, 2015). The article cited several quotes from specialists regarding the quality of such programs and doctors

“The next generation of doctors is being taught to cheat and deceive before they even enter the classroom”(MacAskill, Stecklow and Miglani, 2015)

“The best medical schools in India are absolutely world class, but the Indian government’s process of accrediting a “huge” number of recently opened, private medical schools “has at times been highly dubious.” (MacAskill, Stecklow and Miglani, 2015).

So, I recommend the interested researchers in India to conduct research on revalidation in India using a similar approach. Even in the Sri Lankan settings, there is a need for assessing doctors from India as we are facing imminent threats of the influx of medical professionals from India with the signing of Economic and Technology Agreement (ECTA) freely. So, quality of Indian doctor can affect health care status in Sri Lanka in future. Also, for other developing countries in the world can adopt similar method and customise this methodology to suit their needs.

Also, there is a need for developing indicators to assess the effect of revalidation in Sri Lankan settings. As implementation of the revalidation likely to adopt stepped wedge cluster randomised trial model, having such indicators is essential for assessing the cost-effectiveness of the revalidation process. So, there is a need for good research on deciding and designing of performance indicators relevant to revalidation. Further, researchers should focus on developing appraisal and MSF process to use in Sri Lankan settings. I do suggest the need for more mixed method research in Sri Lankan setting where currently quantitative methodologies are dominant.

The other, key area required is a financial estimation of proposed project as it will be of paramount importance before implementation of the revalidation process in Sri Lanka. Therefore, I would recommend someone with a financial background to engage in a study on a financial aspect of revalidation process in Sri Lanka. If the latter is conducted, it would be very helpful and complementary to my research.

7.8 Planned Future Research by the Author

As a practising professional, I believe that formal exploration of issues as one of the best way to find a solution to real world problems. Even though I have done this project as a requirement of doctoral study program I intended to carry out research studies in future as a passion.

1. Knowledge, Attitude and Perception on revalidation among medical and nursing students in Sri Lanka

2. Health Literacy of Government school teachers in Sri Lanka – A cross sectional analysis among provincial schools in Central Province

3. Health Literacy among pregnant mothers' in Sri Lanka – A cross sectional analysis among pregnant mothers in a Medical Officer of Health area in the Kandy District

4. Why quantitative studies are common among post-graduate students at the post graduate institute of medicine – a mixed method study on MSc research conducted in last decade

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Annexure I: Framework Analysis

	NEED FOR REVALIDATION	CPD	MSF	Appraisal	Complaints
C1	Yes Assessment by a group of doctors common framework with freedom for a change cannot compare Nepal, India or Pakistan with Sri Lanka Attitude & communication as a part of revalidation Doctors' stress will increase	I think Firth thing we need is a proper CPD process. Good mobile coverage for online CPD Colleges to monitor quality of CPD Colleges to decide on CPD points good opportunity to reflect on us Attitude & communication as a part of CPD District quota-like system for CPD Better start gradually with CPD	Yes. different component of doctors' duty is assessed by distinct categories need forms with tick boxes - well-structured and user-friendly.	Need appraisal system for all healthcare workers	Not done properly Political influence

C2	Yes of course Group is better for assessment Each doctor should be assessed by an independent party. Need to find unique way for our system Non-medical aspects need to be assessed Attitude of doctors improved over last 10 years Initially, limit the scope of this only to CPD	Need a better system Should not start with set number of CPD points Unequal opportunities Online CPD good Standardisation of content and lecture Skill development needed Initially, limit the scope of this only to CPD	Good. will be a lot of problems for appraisals and feedback Need to get away from consultant mentality Structured and easy forms needed Radom selection of feedback providers Needed for all healthcare workers	Yes. will be a lot of problems for appraisals and feedback Should be introduced gradually Need to find unique way for our system	Lack of knowledge on system

C3	Yes, we agree Group assessment Attitude and non-medical aspects important Can bring quality improvement starting with CPD and then gradually rolling out appraisal and MSF Time frame must be specified initially	Local consultant to conduct CPD for local MO's Standard of existing CPD not good	Agreed Initially, doctors to select/ non-random Good formats needed starting with CPD and then gradually rolling out appraisal and MSF	Agreed starting with CPD and then gradually rolling out appraisal and MSF	
C4	it should have come before. make compulsory for doctors after some time – grace period specified from the beginning Different model for different category	Need compulsory CPD initially Need change of doctors thinking on need for CPD	Weight of feedback should be depending on provider as well System can unfair for consultants Confidentiality is the most important thing	Should do by immediate supervisor More clinical oriented Need to consider personal conflicts with supervisors	No proper mechanism Need to analyse outcomes and amend the system

	Common framework		Get maximum feedbacks for accuracy		
C5	need to streamline the system before compulsory revalidation. we need to have a proper appraisal system. Doctors to consider revalidation not as punishment but as an opportunity after a couple of years or a grace period - revalidation. everything should be very objective rather than subjective think about female doctors and their commitments	different points for different level of activity online CPD good even the passive listening will improve knowledge	Needed. Not medical aspects but non-medical aspects such as communication and teamwork Random selection not effective	we need to have a proper appraisal system.	we do not have a good system and was very slow but I think now it has improved

C6	I agree on the need for revalidation Start with minimal requirement	CPD programs not uniformly distributed Same CPD program to be conducted everywhere Need to make compulsory – not many but few	Important. Will reduce unnecessary shouting and will improve harmony Ranking can be based on emotions – caution needed on interpretation	Involve more than one assessor	
C7	need it but going to be very difficult give a timeframe for implementation from beginning	Streamlined CPD program needed Need case based discussion as a part of CBD Different setup for consultants needed	Will be problematic Due hierarchical nature consultants get bad reviews Random selection is better but otherwise, I will give only one who will rate me high Can bring benefits to the system Need to create unique system with objectivity in front	immediate supervising officer should be directly involved OK to have more than one Peer review may not be effective.	Inefficient and useless
A1	We need this at some point	CPD or CME is an essential thing	We should use.	Need change in	Need to use the existing

	Not a simple task. Non-medical aspects should be given priority Other healthcare workers also need Need to start with doctors 5 years	need to have updated doctors to far with other countries Ministry should lead CPD process CPD more focused on non-medical aspects Online programs can take about 50%	Will highlight need for teamwork Others view you can shape anyone	current appraisal as it does not serve any purpose	system and improve it
A2	We need Environment is not ready Need to be gentle and gradual process Need extensive discussion before deciding Medical knowledge and other things needed assessment	Essential Ministry should lead CPD process More focus on clinical knowledge	Effective way to break status-quo Doctors will not like to lose hierarchy		System is there but people not using

	Other healthcare workers also need Need to start with doctors 5 years				
A3	We need to implement it soon Environment is good Should assess all domains Other healthcare workers also need Need to start with doctors 5 years	Need organised system CPD free of vested interests required Need curriculum decided by Ministry Multiple partners should get together	Good, but is our system ready? Patient may not be knowledgeable enough Best to start only with medical team and extend it gradually		Better start using system of complaints
A4	We need it certainly Other healthcare workers also need Need to start with doctors	CPD activities are important in improving quality CPD should be multi-organisational effort	Good to implement. Can improve many aspects including hierarchy		People need to use the existing system.

	5 – 10 years	CPD on clinical as well as non-clinical Online programs can supplement classroom learning			
D1	Theoretically yes. Practically we have lot of problems Somehow needed to start. Some doctors will have disadvantage Need knowledge, skill, communication etc. Should not limit to speciality, all should assess on all the speciality due to nature of transfer	we do not have proper CPD system online program better to improve accessibility	Yes, but only doctors and consultants should assess		

D2	Yes. Not an appropriate time to start Could be stressful Need all areas as your prototype System should be designed to include range of activities in different specialities	no proper CPD process for doctors skills are getting better at least in working speciality online programs are good. Doctors informally using online CPD already		Good as current system not good	
D3	Good but need better system of teaching before implementing Need to consider problems faced by female doctors Knowledge and skill must but need other areas Need guidance from authority. General medical knowledge is more important	we do not have a proper system no real problem in the periphery	Good to get comment from other staff categories	Good as we need a formal discussion on our performance with consultants	

	should not be limited to a one speciality				
D4	No need for revalidation but need compulsory CPD process Another stress for already stressed doctors All domains as your suggestion Need a framework from authority	CPD system is premature and not fairly distributed enough CPD programs at the major hospital. need compulsory CPD process	Need a proper system	Good but need freedom of selecting the assessor	
D5	Need proper CPD process before starting Communication is more important	no proper CPD process for doctors provincial directors should arrange CPD for peripheral doctors	If implemented need for all categories of staff Can have positive effects	Good but need more than one assessor	
P1	Need to start as non-compulsorily to get the real picture Knowledge, skill and non-medical aspects needed	Inadequate Online program good but most CPD should be on classroom based	Very good. Workload can affect patient response	Should be introduced for all healthcare workers, else unfair	No trust in the present system

	Needed for all health staff 5 yearly				
P2	We have enough doctors We need to start somehow Communication and other things should be assessed. 10 yearly	No monitoring processes Online program good for knowledge only		Yes	People do not trust the system
P3	Good but need to fill cadre for full implementation May need to start at least in Colombo/ Kandy Communication and other things should be assessed. Need for all the staff – no excuse for females	Required a compulsory system Online program good for knowledge as well as some skills	Good to know other's perception	Something lacking in the system, need consultant involvement in developing juniors	System is there but not functioning properly We can use number and nature of complaints in revalidation

	Good to include quality measures Initially 10 yearly, then come to 5 yearly				
P4	Need to start before filling cadre No country in the world can fill full cadre Communication and respect for others should be assessed. 5 yearly	CPD available but monitoring is lacking Online program good and need to couple with assessment	Good. Will improve communication of our doctors	Should be introduced for all healthcare workers, else unfair	Not much awareness of the process Need to improve awareness Should not wait for complaints, need to be proactive
P5	Good but need to fill cadre first Need to get report from doctors on their development activities Annually	Need such system Consideration on female doctors need	Good move and need this for quality improvement		Patient have no knowledge on present system and even they are aware no trust
G1	No system in Sri Lanka Good to have	Some are up to date, some are not	Good but not practical Need lot of resources	Good but need to set criteria first	I think there is good system No personal experience

	Every 10 years Other professionals in the country have good assessment	Need improvement on communication and attitude Believe knowledge is good on most Recommended a CPD program Use of IT technology	Will have significant improvement if implemented Workload need to be reduced before		
G2	No idea about revalidation good idea to check them regularly no idea about frequency may be 10 years	some are good, some are not good not sure about CPD programs I think need good program Need improvement on empathy and sympathy Must keep punctuality Use IT for activities	good as patient can voice concerns workload will be a problem	Good, we use appraisal in private sector	Useless to make complaints against doctors, nothing is happening
U1	Need to be lined with CPD	Not well-organised process	Good not now. Need to implement step by step.	Yes, but need to link little later.	

	Primarily medical knowledge but other things also important Emergency procedure and basic skills should be included Not be a punishing procedure and it should view as opportunity to uphold professionalism Different assessment at different levels 5-year cycles	Doctors not geared to it Need to make compulsory Adequate programs if participating		Easiest is just to start with CPD	
UN	Theoretically yes, good Cannot comment as we need to listen to membership Prioritise problem in health	CPD programs unregulated Need well-set curriculum SLMA good program – only in Colombo	Theoretically yes, good Lot of practical problems Better not to start with his	Theoretically yes, good Should introduce simultaneou sly for others	Needs lot of improvements Should not link to revalidation initially

	Consequence of failed revalidation should be very clear All areas mentioned in your prototype important 5 yearly	No support from Ministry First established national CPD program	Should introduce simultaneously for others		
MC	SLMC initiative in early 200's failed Appropriate time to start as standards of doctors discussed extensively Gradual stepwise process needed Need overall picture including medical and non-medical aspects	do not have proper and organised CPD process in Sri Lanka unable to start for last 2 decades need to wait before making it compulsory No adequate funding from ministry to develop organised CPD process	Will be effective but need time before introducing	Need to set guidelines for private sector and government sector Good evidence on improving patient care if linked	SLMC has a good system People are not supportive enough Time taking process

	Consultant	Peripheral doctors	New Doctors	PG Trainees	Chronic docs
C1	Should be assessed Peer-review needed, like the UK Need to get rid of hierarchical concept	One-man station problems of attending CPD RDHS only administrative head. May not be suitable to assess clinical skills Even Australian, peripheral doctors have problem, but they do CPD Relief MO's available Composed very low percentage	Start with new recruits or PG trainees	Start with new recruits or PG trainees	Should be targeted group for CPD
C2	Different measures for consultants	Unequal opportunities Use online CPD district quota system like in AL's for CPD			

C3		Need additional facilities Online system good		Good but need active participation of supervisor and trainee	
C4	Need peer-review and formalised method Every consultant can submit his activities as either online or annually stating that I have done this number of CPD activities System can unfair for consultants Need update on technological skills	Need provision of facilities	need to start from somewhere may be from the private sector, may be from teaching hospital or new guys	Already started a process for PG trainees	Need a system like in other countries for doctors not doing PG's, may be establishing a middle grade with CPD
C5	a person should be a peer or more superior to appraise him the consultant is unique as we have the administrative	less opportunity to complete the requirement do not start with fix requirement	Starting with them would be easy Online portfolio for everyone like in medicine	Use existing assessment system for revalidation Online portfolio for	Will be reluctant to change Need a middle grade like the UK

	functions as well as the clinical functions more weight on clinical and need a unique system Online portfolio for everyone like in medicine	online CPD will answer difficulty in attending some CPD		everyone like in medicine	Online portfolio for everyone like in medicine
C6	Give additional weight on CPD program conduction – especially in peripheral centres Need audits for skill assessment We do not have exit exam and needed to be assessed by time to time	don't have supervising consultants no CPD programs cannot come for the CPD programs due to work commitment but most of the time due to personal reasons No benefit of coming for CPD transport is not a problem			

C7	Everyone, including directors, should be assessed Skills need to be assessed	Transport will be a problem Online programs are good but need to think about availability	Easy to start with them, will there be human right violation		Most needed group
A1	Same way as others	Not attending CPD is more of attitude problem Adequate opportunities are there Use online CPD			
A2	Same way as others as all are on the same registry	Responsibility for participation should go to the peripheral doctor as well as the health authority a lot of clinical forums and research symposiums at provincial levels have in-service training programs	Better start with new recruits		

		not participating as not affecting to job, income			
A3	Same way as others. Get the help from colleges	Doctors only think of income Not interested in not affecting their lives as no compulsion Very few have genuine problems	Resistance will minimum if start with new doctors		Need alternative arrangement
A4	Same way as others	Cannot assure equal opportunity but we can assure fair chances Can include grievance handling	start with new doctors		
D1	Can start with consultants				
D2	Need more frequent assessment than mon-specialist				
D3	Need to assess basic knowledge on other specialities	No real problem for them Using this as excuse More worried about PP			

D4	Should be assessed		Make compulsory for new recruits		
D5	Yes. Include amount of teaching as a component				
P1	Need assessment of non-medical aspects				
P2					
P3	Knowledge good but humanity was gone	Need regular programs at periphery			
P4		Can give allowance for rural remote hospitals			
P5		Disadvantage for rural setting unless compensated by some mean			
G1		Use of IT technology can improve availability			Some are not up to date
G2					Senior doctors not updating knowledge
U1	Getting good opportunities Most are already doing adequate CPD	Some issues are there, but minimum criteria can make at achievable level The false argument on lack opportunities.		More opportunities compared to others	Most required people Need to make it mandatory

	Different assessment needed	Online programs good answer for above Colleges to monitor quality			
UN	Ministry must decide on strategy – we will respond accordingly Consultants and admins should be assessed	Lacks but doctors as well as Ministry to take responsibility One man stations have some problems Online program – good for peripheral and to reduce the cost	Ministry must decide on strategy – we will respond accordingly	Can easily pilot a project among them	
MC	Should be assessed more frequently	It is a false belief, only minute fraction will have difficulty Online CPD good as improves accessibility and reduce cost.	Starting with new doctors sensible	PGIM starting many programs	

	Medical Registration	Increment	Incentives	Private Sector	Infrastructure	Minimum Criteria
C1	Should affect registration	Yes. seniority rather than money. transfer issue is more serious among medical officers rather than the salary.	No. Incentive will not guarantee the participation or acceptance Penalty will be more compelling research allowance - the percentage of doctors are applying for research allowance.	Similar system	institutions, each institution should have a committee the committee can take decisions all Hierarchy of doctors. Even for the consultants	Colleges to decide on CPD points need some audit on CPD materials.
C2	before erasing the registration - chance to discuss and rectify errors	Some penalty or incentive	Some penalty or incentive	Better start with large private sector as small number	System is the most important	Not to decide first – need a system before

					SLMC should take the leadership	
C3	Not at the beginning	Should be stopped as it is not only about money Effect on transfer, seniority and other benefits	Should be stopped If any it should be a significant amount			Standard of CPD needed
C4	Not link initially			need to start from somewhere may be from the private sector, may be from teaching hospital or new guys	As far as I am aware there is still no initiatives from The MOH or SLMC.	college can decide on required CPD points for each speciality
C5	Not initially	Will not be effective as only small monetary penalty Combination of penalty and incentive more effective	Good to improve acceptance but will not be very effective Combination of penalty and incentive more effective		need a strong well-made guideline need good	Minimum standard should be decided Gradually increase the requirement

C6	Wait until establishing good system	Some type of penalty is need	Good. Need to couple with penalty		I think it should involve other consultants, as well as they, are not only managing surgical cases but all the cases. Need audits for skill assessment	Start with low requirement
C7	cannot erase someone from medical register until we have enough doctors give a timeframe for implementation from beginning	Warning system is needed before stopping increment	Good if couple with warning system Penalties should come only ignoring warnings	Better to start with them	Develop structure first like availability of CPD	Need to decide by colleges

A1	should put forward this until we have established good infrastructure.	Good. Compulsion is needed. Best way to go forward as this is like e-bar	Good. Increase attractiveness	Yes		
A2	Need better dialogue before deciding	It will be helpful like financial incentive	It should not be the only way	Same way as others		
A3	we make it compulsory and linked to registration at least for new people	Should not do that. If affects seniority and will attract resistance as linked to ministry seniority	Good and certainly improve participation	Same assessment	Need supportive mechanism for doctors who are not up to the standard	
A4	We need to it slowly Start with compulsory training	Need some legal binding regulation	Most needed people will not bother about allowance. Need some legal binding regulation	Can use their appraisal system if efficient		
D1	Should not be linked to this	Not initially, but later	Need significant amount to have an effect	Same system		Colleges or ministry should specify

D2	Put them on nonclinical positions	People will not bother about losing 1000 a month	Good	Same system Can start with private sector as a pilot		
D3	Not to link	Good as we need something negative	Good to counteract resistance	Same system		
D4	Not cancel but two fees and two types of registration The second cycle cancel registration	Yes, but need some time for implementation	Need combination of punishment and reward	Same system with separate guidance on increment, appraisal	Need amendments to current system	Colleges or clinical societies need to specify
D5	We need to cancel registration at some point as not safe for patients	No. should not be different from other government servants	Best way. improve acceptance	Same system		Need good mixture of types
P1	Not initially					
P2	No		Good Incentive will help to lessen resistance from unions			

P3	Initially without affecting registration but once the system established can include that					
P4	No		Good, but incentive should be given to other care workers as well.			
P5	No					
G1	Not to cancel but need to help Use in a job that suits his strength	If set up criteria properly, it is good	Good motivator People like to engage in activities if monetary benefits	Can use the same methodology	Government should provide facilities	Somebody need to decide on minimum requirement Include activities proven to have benefit
G2	Unfair to cancel	No much idea about it	Already getting salary and income from private practice.			
U1	Should link with minimum mandatory		Not a bad idea but making CPD			Need to start with minimum criteria

	criteria which are easily achievable Not cancel registration straight away but can give targeted opportunities		mandatory should be the primary measure. Most required people will get away if it is optional Study leave is already there but doctors not using it due to overtime			
UN	Should not erase registration We do not have enough doctors and void will be filled by quacks	Without proper CPD program, we cannot think about these Cannot comment as union representative	Yes. I t will help to popularise the program and counteract to resistance First, it must be non-compulsory	Same way I thin Maybe ministry can start with them	Ministry is lazy	Council should decide and we can respond to them
MC	Need amendments to medical ordinance	Good but need amendments to system and think about possible resistance	I think SLMA and colleges can start CPD programs at a nominal fee and government	Same way with slight adjustment to suit the system		Accreditation Council should set

	Legal link need to be established Cancellation or withholding need later		can reimburse money in a form of allowance This will help to increase the acceptance and quicken the process			

	Patient Safety	Administrative Hierarchy Provincial Government	Revalidation Council	Public	Intergroup conflicts /TU	Cost/ process
C1	the responsibility of a doctor to maintain his knowledge and skills. If you can't maintain your knowledge, you should not be	each institution should have a committee Committee decide on everyone Colleges should take leadership Ministry inefficient RDHS only administrative head. May not be	each institution should have a committee	Start questioning with substandard people getting qualified	Need to get rid of hierarchical concept Part due to our communication problems GMOA has opposed in the past	Better start gradually with CPD Benefits will overweight the cost

	allowed to treat people. It is not safe.	suitable to assess clinical skills Need a committee				
C2	there will be a positive impact on patient care.	Need efficiency by Ministry Do not respect/trust on the ministry Do something on quacks before this	Group is better for assessment Standardisation of content and lecture Could be subjected to manipulation	People now question about mechanism of updating doctors' knowledge	GMOA will not oppose	Gradual process
C3	Can bring quality improvement like reducing maternal mortality	committee rather than a single authority	Balanced group with representation from all committee rather than a single authority		Conflicts will be managed with gradual introduction and introduction to other groups	Gradual process Admins should evaluate

C4		still no initiatives from The MOH or SLMC. Political manipulation of revalidation will be there but not everyone can do that	Needed with more college representatives	Party politics influence on everything – even on this matter	start a discussion with trade unions resistance is invariable but need proper management of change can use GMOA's anti-SAITM policy for improving the standard of doctors	Cost would be much higher for MSF – may not be suitable
C5		ministry apprising a consultant in not good			Will be reluctant to change	MSF is costly Radom selection at MSF is not cost effective

C6		Colleges rather than admins should take the leadership Consultants should press the ministry for resources	Same CPD program to be conducted everywhere Colleges can maintain standards	May not understand the importance Public may lose the trust on doctors because of SAITM	GMOA should support this as they are also professional organisation Will be less resistance due to SAITM Can affect on MSF	Need additional resources like staff Need to think about time constraints System may not be able to withstand the cost Priority may be put on other things
C7	Will improve as weak people will not enter medicine	superiors should be decided by the College of speciality.	Colleges to take responsibility for standards		GMOA will oppose Other TU may ask for similar	MSF may not be feasible

		handled by the relevant college rather than the. Need political support SLMC should take initiative			incentive- I think it is positive	May not be hurried to implement this in a hurry Cost will be higher than benefits
A1		Ministry to take leadership and ministry will be focal point	Ministry should lead	Service user input is essential Need to work out on workload of doctors	GMOA resistance will be there Good if other groups resist we can give them revalidation	Complicated process due to permanent employment Cost effective
A2	Some practising with gap of knowledge compromisi	Accounts on attendance Ministry to take leadership and	Ministry with SLMC and colleges	We can assess non-medical aspects of doctors' service	GMOA resistance will be there Good if the ask for it	Implement for new doctors to

	ng patient safety	ministry will be focal point the provincial level we have a lot of in-service training programs				simplify issues We are spending so much money on unnecessary things and it is worth spending money on this process.
A3		I think we need a sort of committee as in your suggestion	Need curriculum decided by Ministry Council can monitor the quality	Patient may not be knowledgeable enough	GMOA resistance will be there	benefits overweigh the costs.
A4			Can set up the committee with all stakeholders	We need to use their view	GMOA will oppose	Health is human resource

				Many are knowledgeable		incentive and cost is justifiable
D1		Ministry should develop system No change required			resistance from GMOA, financial incentives will help to counteract	
D2		Ministry along with SLMC, colleges etc. No change required			resistance from GMOA inevitable	
D3		Committee comprising all stakeholders No change required			If constructively presented GMOA, in general, will support	
D4		Ministry with SLMC No change required			GMOA will go for trade union actions	
D5	Overall good for patients	Committee comprising all stakeholders provincial directors should arrange CPD for peripheral doctors				

		No change required				
P1	Certainly, will improve	Ministry with SLMC	Should include paramedics as well		Plan for other health workers as well If cancelling registration GMOA will oppose	
P2		the problem is the distribution of doctors Ministry should take leadership	Committee is better		Incentive will help to lessen resistance from unions If cancelling registration GMOA will oppose	
P3	Quality will improve	Ministry should take leadership				Will reduce migration Better include foreign training for quality improvement

P4		Doctors should take the leadership			the incentive should be given to other care workers as well. Else can cause problems.	
P5	Lack of CPD compromise	Consultants should take the responsibility			It should come to other groups gradually	
G1	Include activities proven to have benefit Quality of the service will improve	Need to bring a policy paper first Government should take the leadership Will not be a problem	No idea	Public involvement essential Should use facilities cautiously to reduce the workload	Resistance will come from doctors Some more interested in private practice and earning money	Identify weak areas and put them on training Include activities proven to have benefit Yes, even if government spent the money

G2	Believe it will improve patient safety			is good and that will help them to give the best treatment for us	Doctors will not be happy and will go for strike as always	
U1	Definitely, improve quality	SLMC need to take leadership Ministry, colleges supportive role	Ministry, SLMC, colleges and others Each has distinctive responsibility Limited role for medical colleges	The public is questioning doctors' competencies now.	I don't expect real resistance Get social media to support Need to bring on other healthcare categories later	Cost-effective As revalidation is more legal, ned to start without putting the word but as mandatory CPD Resistance will subside with time

UN	Revelation good for patients Quacks pose more danger to public	No support from Ministry for CPD streamlining Ministry to provide money	Ministry should establish national CPD council Get support from SLMA/SLMC and colleges	Needs patient involvement must be cautiously introduced Ministry need to resolve problems such as overcrowding, waiting lists, drug availability	If done with good intentions without affecting registration GMOA will support Environment has changed, cannot decide based on past actions	Cost can be justified. But introduce CPD based process initially
MC	All will improve patient safety up to some level	No adequate funding from ministry to develop organised CPD process	SLMC and Ministry to take leadership Need accreditation council		Need assessment of other categories but in a gradual way	GMOA will resist in different ways 5 -10 years cycles

Annexure II - Questionnaire

Questionnaire for Medical Doctors

This questionnaire ins intended for collecting data from medical doctors at Teaching Hospital - Kandy and Teaching Hospital – Peradeniya. This is a self-administered questionnaire. Please inquire from data collector if you have any question.

Information is attached with the information sheet attached to the consent form. A copy of the information sheet and the consent form will be given to you.

Section 1: Socio-demographic information

1. Age as of 01/06/2017 in years: …….

2. Gender
    a. Male ☐
    b. Female ☐

3. Ethnicity
    a. Sinhala ☐
    b. Sri Lankan Tamil ☐
    c. Indian Tamil ☐
    d. Sri Lankan Moor ☐
    e. Other ☐

4. Religion

    a. Buddhist ☐

    b. Hindu ☐

    c. Islam ☐

    d. Christian ☐

    e. Other ☐

5. Marital Status

    a. Single ☐

    b. Married ☐

    c. Widowed ☐

    d. Divorced/Separated ☐

6. Number of Children: …….

7. SLMC Registration year (Full Registration): …….

8. Present Grade

    a. Specialist Grade Consultant ☐

    b. Grade I – Medical Officer ☐

    c. Preliminary Grade ☐

    d. Grade II – Medical Officer ☐

e. PG Trainee ☐

Section 2: Perception on CPD & Revalidation process

1. Sri Lankan health system requires formal CPD process for doctors
    a. Strongly Agree ☐
    b. Agree ☐
    c. Neutral ☐
    d. Disagree ☐
    e. Strongly Disagree ☐

2. The CPD process should be
    a. Mandatory for everyone ☐
    b. Mandatory for new doctors joining the ministry ☐
    c. Optional for everyone ☐
    d. Other ☐

    (Please Specify) …….

3. CPD requirement should be less for (you may select none or more than one option)
    a. for female doctors with kids ☐
    b. Peripheral doctors ☐
    c. Doctors who are older than 50 years ☐

d. Private Hospital Doctors ☐

e. Any other ☐

(Please Specify) …….

4. Minimum CPD points should be required to (you may select none or more than one option)

a. Renew the registration ☐

b. Annual increment ☐

c. Obtain additional financial allowances ☐

d. Other ☐

(Please Specify) …….

5. Cost of the CPD should be borne by

a. Doctors ☐

b. Ministry ☐

c. Other ☐

(Please Specify) ……..

6. CPD can lead to improvement in patient safety

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

7. CPD can lead to improvement in public confidence on doctors

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

8. National Council for CPD and Revalidation should be established to manage all CPD activities (accreditation/ point awarding) and future revalidation

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

9. National CPD council should include representations from (you may select more than one option)

a. The MOH ☐

b. SLMC ☐

c. Royal Colleagues ☐

d. Trade unions ☐

e. Medical schools ☐

f. Other categories of staff ☐

g. Patients ☐

10. Accredited online CPD programs should be considered for CPD points

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

11. Sri Lanka requires a revalidation process

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

12. At the beginning, revalidation process should be

a. Mandatory for everyone

☐

b. Mandatory for new doctors joining from the ministry and optional for present doctors

☐

c. Optional for everyone

☐

d. Optional for first 10 years and then mandatory for everyone

☐

e. Other

☐

(Please Specify) ……..

13. Revalidation process should address non-medical component like communication, attitude

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

14. Medical/clinical components are more important than non-medical components

a. Strongly Agree ☐

b. Agree ☐

c. Equally Important ☐

d. Disagree ☐

e. Strongly Disagree ☐

15. Revalidation should be done in

a. Every 5 years ☐

b. Every 10 years ☐

c. Any other ☐

(Please Specify) ……..

16. Revalidation process should initially start only with CPD points

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

17. Once a proper system established, revalidation should include annual appraisal

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

18. Once a proper system established, revalidation should include multi-source feedback

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

19. Sri Lankan patients are knowledgeable enough to involve in multi-source feedback process

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

20. Once a proper system established, revalidation should include analysis of complaints and compliments

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

21. How likely for you to commit for optional revalidation process if it coupled with revalidation allowance of 25% - 33% of basic salary

a. Highly likely ☐

b. Likely ☐

c. Not sure ☐

d. Unlikely ☐

e. Highly Unlikely ☐

22. Do you engage in private practice?

a. Yes ☐

b. No ☐

23. Will you resist for introduction mandatory revalidation process for doctors?

a. Highly likely ☐

b. Likely ☐

c. Not sure ☐

d. Unlikely ☐

e. Highly Unlikely ☐

24. Once proper system established for doctors, similar process should be introduced to other categories like nursing officers and paramedical officers

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

25. Revalidation will improve patient safety in Sri Lanka.

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

26. Revalidation will improve healthcare service quality in Sri Lanka

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

27. Revalidation will increase public confidence on doctors

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

28. Revalidation is a cost-effective system for Sri Lanka

a. Strongly Agree ☐

b. Agree ☐

c. Neutral ☐

d. Disagree ☐

e. Strongly Disagree ☐

Consent form for medical officers/ stakeholders

This consent form is intended for medical officers working in Teaching Hospital - Kandy.

Name of Principal Investigator

DR H. K. M. M. B. KAVISEKARA - Trainee – Doctor of Business Administration, London Metropolitan University, London, United Kingdom

Name of Supervisors

Dr. Hazel Messenger

London Metropolitan University

Dr Wendi Bloisi

London Metropolitan University

Name of Proposal

Developing an Integrated Appraisal and Revalidation Process for Sri Lankan Doctors – An Expedited, Low-Cost Process Using a Prototype

You will be given a copy of the full Informed Consent Form

Annexure III – Information Sheet and Consent Form

PART I: Information Sheet

Introduction

I am Dr H. K. M. M. B. Kavisekara, currently attached to the London Metropolitan University, London, United Kingdom, as a trainee, following Doctor of Business Administration course. I would like to invite you to take part in the research study titled as "Developing an Integrated Appraisal and Revalidation Process for Sri Lankan Doctors – An Expedited, Low-Cost Process Using a Prototype". The study will be conducted by Dr. H. K. M. M. B. Kaviseara under the supervision of Dr. Hazel Messenger (Senior Lecturer, London Metropolitan University) and Dr Wendi Bloisi (London Metropolitan University) in Health Sector in Sri Lanka. The study will include in medical officers working in Teaching Hospital – Kandy and medical officers working in Teaching Hospital – Peradeniya. In addition, qualitative stage will recruit stake holders from different healthcare institutions in Sri Lanka.

Purpose of the research

This study is conducted as a partial requirement for the degree of Doctor of Business Administration, London Metropolitan University, London, United Kingdom.

Type of Research Intervention

Research consists of two parts.

1. Qualitative Stage: Procedure of the study is either invited for a Focused Group Discussion or In-depth Interview.
2. Quantitative Stage: Procedure of the study is taking answers to a questionnaire in one time. No intervention is involved in this study.

Participant selection

You are selected, as you are currently working as a medical officer in a selected hospital or you are considered as an important stakeholder of revalidation process for doctors

Voluntary Participation

Your participation in this study is voluntary. You are free to refuse participation at all or to withdraw from the study at any time despite consenting to take part earlier. If you decide not to participate or to withdraw from the study, you may do so at any time.

Procedures and Protocol

1. Qualitative Stage: Procedure of the study is either invited for a Focused Group Discussion or In-depth Interview.
2. Quantitative Stage: You will be given a questionnaire to fill and after completing it will be collected by the investigator.

Duration

The data collection will be carried out from March 2017 to May 2017. The time taken to fill the questionnaire is approximately 15 minutes. Time taken for in-depth interview will be less than one hour and focused group will not expected to be longer than 90 minutes

Benefits, risks & side effects

You will not get any personal benefits from the participation of this study. However, study results might give you indirect benefits by improving the quality of medical officers in future. There are no risks or side effects on your health by participating in this research.

Reimbursements

You will not be paid any incentive and you will not have any physical or mental hazard at all by participating to this study.

Confidentiality

Confidentiality of all records is guaranteed and no information by which you can be identified will be released or published. These data will never be used in such a way that you could be identified in any way in any public presentations or publication without your express permission.

Sharing the Results

The research finding may be published in accredited journal or may be presented in professional conference.

Right to Refuse or Withdraw

You may withdraw your consent to participate in this study at any time with no penalty or loss of any benefits. Please notify the investigator as soon as you decide to withdraw your consent.

Ethical Clearance

This proposal has been reviewed and approved by the ERC of the Faculty of Medicine, University of Peradeniya, which is a committee whose task it is to make sure that research participants are protected from harm.

Contact Information

If you have any question or need any clarification about the study, please feel free to contact me through telephone no 0094773000165 or by email kavisekara@gmail.com at any time.

You can ask me any more questions about any part of the research study, if you wish to. Do you have any questions?

Dr. H. K. M. M. B. Kavisekara

11 A, Heenatikumbura,

Pilawala,

Kandy.

PART II: Certificate of Consent

I have read the foregoing information. I have had the opportunity to ask questions about it and any questions that I have asked have been answered to my satisfaction. I consent voluntarily to participate as a participant in this research.

Print Name of Participant_____

Signature of Participant _____

Date _____

Day/month/year

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands the procedure. I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

A copy of this ICF has been provided to the participant.

Print Name of Researcher/person taking the consent_____

Signature of Researcher /person taking the consent_____

Date _____

Annexure IV - Statistics Tables

Need for CPD				
	Frequenc y	Percent	Valid Percent	Cumulative Percent
Strongly Agree	78	25.4	25.4	25.4
Agree	138	45.0	45.0	70.4
Neutral	8	2.6	2.6	73.0
Disagree	72	23.5	23.5	96.4
Strongly Disagree	11	3.6	3.6	100.0
Total	307	100.0	100.0	

CPD Improve Safety				
	Frequenc y	Percent	Valid Percent	Cumulative Percent
Strongly Agree	74	24.1	24.1	24.1
Agree	123	40.1	40.1	64.2
Neutral	36	11.7	11.7	75.9
Disagree	63	20.5	20.5	96.4
Strongly Disagree	11	3.6	3.6	100.0
Total	307	100.0	100.0	

CPD Improve Confidence				
	Frequenc y	Percent	Valid Percent	Cumulative Percent
Salary Increment	54	17.6	17.6	17.6
Any Other	78	25.4	25.4	43.0
3	68	22.1	22.1	65.1
4	93	30.3	30.3	95.4
5	14	4.6	4.6	100.0
Total	307	100.0	100.0	

Need CPD Council				
	Frequenc y	Percent	Valid Percent	Cumulative Percent
Strongly Agree	69	22.5	22.5	22.5
Agree	144	46.9	46.9	69.4
Neutral	31	10.1	10.1	79.5
Disagree	51	16.6	16.6	96.1
Strongly Disagree	12	3.9	3.9	100.0
Total	307	100.0	100.0	

Online CPD				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	100	32.6	32.6	32.6
Agree	133	43.3	43.3	75.9
Neutral	8	2.6	2.6	78.5
Disagree	59	19.2	19.2	97.7
Strongly Disagree	7	2.3	2.3	100.0
Total	307	100.0	100.0	

Need Revalidation				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	65	21.2	21.2	21.2
Agree	113	36.8	36.8	58.0
Neutral	31	10.1	10.1	68.1
Disagree	87	28.3	28.3	96.4
Strongly Disagree	11	3.6	3.6	100.0
Total	307	100.0	100.0	

Non-Medical Aspects				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	93	30.3	30.3	30.3
Agree	152	49.5	49.5	79.8
Neutral	47	15.3	15.3	95.1
Disagree	13	4.2	4.2	99.3
Strongly Disagree	2	.7	.7	100.0
Total	307	100.0	100.0	

Start with CPD only				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	117	38.1	38.1	38.1
Agree	124	40.4	40.4	78.5
Neutral	41	13.4	13.4	91.9
Disagree	21	6.8	6.8	98.7
Strongly Disagree	4	1.3	1.3	100.0
Total	307	100.0	100.0	

Include Appraisal				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	72	23.5	23.5	23.5
Agree	119	38.8	38.8	62.2
Neutral	87	28.3	28.3	90.6
Disagree	25	8.1	8.1	98.7
Strongly Disagree	4	1.3	1.3	100.0
Total	307	100.0	100.0	

Include MSF				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	53	17.3	17.3	17.3
Agree	83	27.0	27.0	44.3
Neutral	90	29.3	29.3	73.6
Disagree	71	23.1	23.1	96.7
Strongly Disagree	10	3.3	3.3	100.0
Total	307	100.0	100.0	

Include Complaints				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	61	19.9	19.9	19.9
Agree	127	41.4	41.4	61.2
Neutral	35	11.4	11.4	72.6
Disagree	70	22.8	22.8	95.4
Strongly Disagree	14	4.6	4.6	100.0
Total	307	100.0	100.0	

Patient Safety				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	63	20.5	20.5	20.5
Agree	122	39.7	39.7	60.3
Neutral	49	16.0	16.0	76.2
Disagree	59	19.2	19.2	95.4
Strongly Disagree	14	4.6	4.6	100.0
Total	307	100.0	100.0	

Service Quality				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	43	14.0	14.0	14.0
Agree	82	26.7	26.7	40.7
Neutral	75	24.4	24.4	65.1
Disagree	92	30.0	30.0	95.1
Strongly Disagree	15	4.9	4.9	100.0
Total	307	100.0	100.0	

Patient Confidence				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	62	20.2	20.2	20.2
Agree	122	39.7	39.7	59.9
Neutral	51	16.6	16.6	76.5
Disagree	61	19.9	19.9	96.4
Strongly Disagree	11	3.6	3.6	100.0
Total	307	100.0	100.0	

Cost Effectiveness				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	66	21.5	21.5	21.5
Agree	76	24.8	24.8	46.3
Neutral	75	24.4	24.4	70.7
Disagree	80	26.1	26.1	96.7
Strongly Disagree	10	3.3	3.3	100.0
Total	307	100.0	100.0	

Others Revalidation				
	Frequenc y	Percent	Valid Percent	Cumulative Percent
Strongly Agree	70	22.8	22.8	22.8
Agree	123	40.1	40.1	62.9
Neutral	32	10.4	10.4	73.3
Disagree	71	23.1	23.1	96.4
Strongly Disagree	11	3.6	3.6	100.0
Total	307	100.0	100.0	

Mann-Whitney Test for Perception score based on Gender

Ranks				
	Sex	N	Mean Rank	Sum of Ranks
Perception Score	Male	173	155.29	26865.50
	Female	134	152.33	20412.50
	Total	307		

Test Statistics	
	Perception Score
Mann-Whitney U	11367.500
Wilcoxon W	20412.500
Z	-.290
Asymp. Sig. (2-tailed)	.772
Grouping Variable: Sex	

Mann-Whitney Test Perception score based on having children or not

Ranks				
	Have Child or Not	N	Mean Rank	Sum of Ranks
Perception Score	0	61	143.50	8753.50
	1	246	156.60	38524.50
	Total	307		

Test Statistics	
	Perception Score
Mann-Whitney U	6862.500
Wilcoxon W	8753.500
Z	-1.033
Asymp. Sig. (2-tailed)	.302
a. Grouping Variable: Have Child or Not	

Mann-Whitney Test Perception score based on Living with partner or not

Ranks				
	Living Together	N	Mean Rank	Sum of Ranks
Perception Score	0	256	155.86	39900.00
	1	51	144.67	7378.00
	Total	307		

Test Statistics	
	Perception Score
Mann-Whitney U	6052.000
Wilcoxon W	7378.000
Z	-.823
Asymp. Sig. (2-tailed)	.411
a. Grouping Variable: Living Together	

Kruskal-Wallis Test for Gender Variation of Recommendation on less CPD for Female

Ranks			
	Sex	N	Mean Rank
Less CPD for Female	Male	173	180.17
	Female	134	120.21
	Total	307	

Test Statistics	
	Less for Female
Chi-Square	48.529
df	1
Asymp. Sig.	.000
a. Kruskal-Wallis Test	
b. Grouping Variable: Sex	

Kruskal-Wallis Test on Perception Score based on Grade of Doctor

Ranks			
	Present Grade	N	Mean Rank
Perception Score	Consultant	24	236.81
	Grade 1	46	152.64
	Grade 2	134	142.06
	Preliminary	57	130.89
	PG Trainee	46	175.57
	Total	307	

Test Statistics	
	Perception Score
Chi-Square	29.935
df	4
Asymp. Sig.	.000
a. Kruskal-Wallis Test	
b. Grouping Variable: Present Grade	

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of PercepScore is the same across categories of Present Grade.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.

Asymptotic significances are displayed. The significance level is .05.

Kruskal-Wallis Test on Perception Score based on Service Category

Ranks			
	Service Category	N	Mean Rank
Perception Score	1	30	101.32
	2	137	156.77
	3	82	158.46
	4	30	156.28
	5	9	133.17
	6	12	187.79
	7	7	232.43
	Total	307	

Test Statistics	
	Perception Score
Chi-Square	18.647
df	6
Asymp. Sig.	.005
a. Kruskal-Wallis Test	
b. Grouping Variable: Service Category	

Less for Female				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	118	38.4	38.4	38.4
No	189	61.6	61.6	100.0
Total	307	100.0	100.0	

Less CPD for Peripheral Doctors				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	97	31.6	31.6	31.6
No	210	68.4	68.4	100.0
Total	307	100.0	100.0	

CPD Link to Medical Registration				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	139	45.3	45.3	45.3
No	168	54.7	54.7	100.0
Total	307	100.0	100.0	

CPD Link to Annual Increments				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	84	27.4	27.4	27.4
No	223	72.6	72.6	100.0
Total	307	100.0	100.0	

CPD link to allowance				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	255	83.1	83.1	83.1
No	52	16.9	16.9	100.0
Total	307	100.0	100.0	

Optional Engagement				
	Frequency	Percent	Valid Percent	Cumulative Percent
Highly Likely	86	28.0	28.0	28.0
Likely	120	39.1	39.1	67.1
Not sure	21	6.8	6.8	73.9
Unlikely	71	23.1	23.1	97.1
Highly Unlikely	9	2.9	2.9	100.0
Total	307	100.0	100.0	

Case Processing Summary						
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Do PP * Optional Yes No	307	100.0%	0	0.0%	307	100.0%

Do PP * Optional Yes, No Crosstabulation				
		Optional Yes No		Total
		1.00	2.00	
Yes	Count	131	11	142
	% within Do PP	92.3%	7.7%	100.0%
	% within Optional Yes No	63.6%	10.9%	46.3%
	% of Total	42.7%	3.6%	46.3%
No	Count	75	90	165
	% within Do PP	45.5%	54.5%	100.0%
	% within Optional Yes No	36.4%	89.1%	53.7%
	% of Total	24.4%	29.3%	53.7%
Total	Count	206	101	307
	% within Do PP	67.1%	32.9%	100.0%
	% within Optional Yes No	100.0%	100.0%	100.0%
	% of Total	67.1%	32.9%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	75.71	1	.000		
Continuity Correction	73.61	1	.000		
Likelihood Ratio	84.17	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	75.47	1	.000		
N of Valid Cases	307				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 46.72.					

b. Computed only for a 2x2 table

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	.497	.000
	Cramer's V	.497	.000
N of Valid Cases		307	

University Staff in Council				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	104	33.9	33.9	33.9
No	203	66.1	66.1	100.0
Total	307	100.0	100.0	

Paramedics in Council				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	83	27.0	27.0	27.0
No	224	73.0	73.0	100.0
Total	307	100.0	100.0	

Patients in Council				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	131	42.7	42.7	42.7
No	176	57.3	57.3	100.0

Total	307	100.0	100.0	

Cost By				
	Frequency	Percent	Valid Percent	Cumulative Percent
Ministry	279	90.9	90.9	90.9
Doctors	28	9.1	9.1	100.0
Total	307	100.0	100.0	

Nature of Revalidation				
	Frequency	Percent	Valid Percent	Cumulative Percent
Mandatory to All	83	27.0	27.0	27.0
Mandatory to New	111	36.2	36.2	63.2
Optional for All	113	36.8	36.8	100.0
Total	307	100.0	100.0	

Frequency of Revalidation				
	Frequency	Percent	Valid Percent	Cumulative Percent
5 Yearly	248	80.8	80.8	80.8
10 Yearly	59	19.2	19.2	100.0
Total	307	100.0	100.0	

Cost Effectiveness				
	Frequency	Percent	Valid Percent	Cumulative Percent
Strongly Agree	66	21.5	21.5	21.5
Agree	76	24.8	24.8	46.3
Neutral	75	24.4	24.4	70.7
Disagree	80	26.1	26.1	96.7
Strongly Disagree	10	3.3	3.3	100.0
Total	307	100.0	100.0	

Crosstabs & Chi-Square on opinion on involvement of professional colleges among consultants and other grades

Case Processing Summary						
	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
New Grades * COLLEGE	307	100.0%	0	0.0%	307	100.0%

New Grades * COLLEGE Crosstabulation					
			COLLEGE		Total
			Yes	No	
New Grades	1.00	Count	23	1	24
		Expected Count	12.1	11.9	24.0
		% within New Grades	95.8%	4.2%	100.0%
		% within COLLEGE	14.8%	0.7%	7.8%
		% of Total	7.5%	0.3%	7.8%
	2.00	Count	132	151	283
		Expected Count	142.9	140.1	283.0
		% within New Grades	46.6%	53.4%	100.0%
		% within COLLEGE	85.2%	99.3%	92.2%
		% of Total	43.0%	49.2%	92.2%
Total		Count	155	152	307
		Expected Count	155.0	152.0	307.0
		% within New Grades	50.5%	49.5%	100.0%
		% within COLLEGE	100.0%	100.0%	100.0%
		% of Total	50.5%	49.5%	100.0%

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	21.415[a]	1	.000		
Continuity Correction	19.492	1	.000		
Likelihood Ratio	26.204	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	21.345	1	.000		
N of Valid Cases	307				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 11.88.					
b. Computed only for a 2x2 table					

Symmetric Measures			
		Value	Approximate Significance
Nominal by Nominal	Phi	.264	.000
	Cramer's V	.264	.000
N of Valid Cases		307	

Relative importance of medical/ non-medical importance			
	Frequency	Percent	Cumulative Percent
Strongly Agree	66	21.5	21.5

Agree	104	33.9	55.4
Neutral	63	20.5	75.9
Disagree	73	23.8	99.7
Strongly Disagree	1	.3	100.0
Total	307	100.0	